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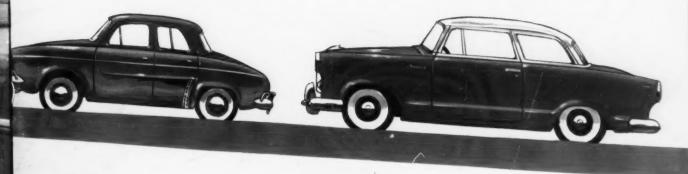
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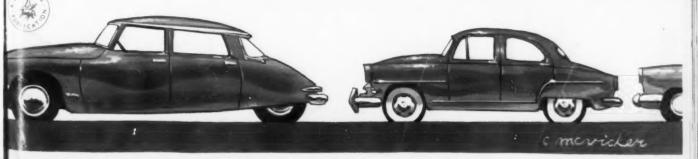
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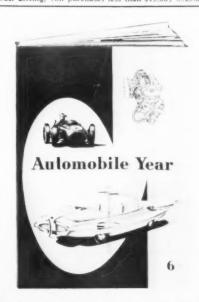
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## very sincerely yours:

HERE IS A MAXIM to the effect that when you're a little guy and someone else is perturbed about what you are or what you do they'll toss stones at you but the higher you go and the bigger you get the less safe you are. When you get up on top of the heap they'll drag out the heavy artillery.

So it is with the small car industry—and with the people who own small cars. A few years back the man who drove around in a sports car or a light car of one form or another was termed a screwball and the industry that supplied his wants was looked upon with about as much respect as the door-to-door potato-peeler peddler.

Then the word spread. More and more people, a lot of whom could hardly be lumped in the screwball category, started buying the imported cars which offered, among other things, distinctive styling, special driving characteristics, economy of operation and ease of parking. The industry grew with the demand until during the past year the market in imported cars hit over eight percent of the total U.S. new car consumption with a prediction of up to 12 percent for 1959. This is a big chunk of anybody's business.

Out came the howitzers. The big three started bringing in their own foreign machines. The little two (not so little any more) built their own answers and hit the jackpot. And still the imports climbed.

But three shots were fired that require answering. The first: This is the penultimate year—after the boom comes the crash; foreign cars are on their way out. The second: Americans are being "sold" by an invasion from overseas. The third: Imports are taking the bread out of Americans' mouths.

To all of which: NONSENSE! And for good reasons.

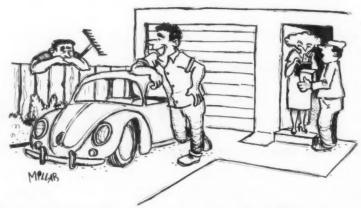
As for the first; Americans have bought more small cars, the majority of them imports, during the first few months of this year than ever before. They're just being a bit selective and dealers have had to *prove* their particular brand of small car was better for the customer than somebody else's small car. Those who failed to do so got pinched.

As to the second shot, nobody was invaded. Invasion carries the implication that one's domain is being penetrated by an unwelcome force against one's will. Face it, the imports were invited here. In a booklet written by Everett Taylor Martin, V.P. of Jaguar Cars Inc., the American branch of the English firm, it is pointed out that Detroit spends more for promotion and "sizzlemanship" in one week than the entire imported car industry spends in a year for the same purpose. Nobody is being "sold" anything. We have demanded these cars and the Europeans have supplied them. Mr. Martin also has an answer for the third shot, too. We export 40 percent of the world's automotive products and import eight percent (12 percent predicted) of our own total consumption of these products. Further, countries like Britain use the money they get for their cars to buy American wheat, coal and other U.S. products. Bread out of the mouths of American workers, indeed!

As to the future, look at it this way. We Americans scrap more cars in a single year than there are running totally on the roads of Great Britain. Out of 82 million cars in the world, we Americans use 56 million. This last comes from J. Bruce McWilliams, V.P. of SAAB Inc., who has much, much more to say on the same subject. The future? Two and a half million light cars a year within 10 years.

-john christy

### OH YEA!



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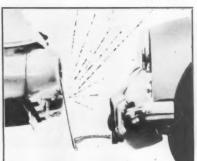
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### letters

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Bekrag Auto Sales Corp. 43 S. Harrison St. East Orange, N. J.

### AH WELL, THE AMERICANS

Re your SCI, Jan. 1959, page 50, "Lagonda", last pragraph.

Where, pray tell, is "-Farnce-"? Possibly this is where they hold the famed La Mens?

Samci owner

What do you want, prefection? Ed.

### MORE ON STEAM

When I read the article "The Steamers Weren't So Hot" by Merwin Dembling. I referred to the "Steam Car Roster" and not finding him listed, I assume that he has been reading stories about steam cars.

That these were stories is evident by his statement that it took one half hour to get up steam every day. Actually steam was maintained day and night by a small pilot light that was so well adjusted that a car could be parked at the theatre with 500 p.s.i. and three hours later the exact same pressure would be on the boiler.

He writes about some passengers and car owners being on edge concerning the operation of the boiler. We find this same condition today with some people on edge while riding in airplanes but they are used with great efficiency.

About the valves falling out when they are turned the wrong way I shall not concern myself, as it is too elementary, but to inform Mr. Dembling, and others who may read the article, I would like to quote from the dynamometer manufacturers' "Manual of the Dynamometer" showing that a 1956 Cadillac turning at 2500 r.p.m. develops 112 H.P. at the rear wheels

A 1920 Stanley Steam Car with a twocylinder engine would develop that much horse power when leaving the curb to say nothing of having to go sixty miles an hour.

So it can be seen that Detroit is catching up, but they have not fully arrived as yet.

Elbridge S. Johnson Arlington, Mass.

### NAIVE?

In regard to the article in your January issue entitled "Riverside; American Racing Comes of Age", by Jim Mourning and Bob Rolfson; on page 62 the authors quote the statement that the contention prevalent among the Ameican race track jockeys was that with apparently little or no trouble at all they would be able to "run all over the sportscar CLODS."

It came as quite a surprise to us that an attitude as naive as this should exist among men whose side show dare-devil methods offer no comparison to the superb record of skill and accomplishment enjoyed by sports car drivers the world

We have read and enjoyed your magazine for many years and sincerely hope that a future edition will include in it an article spearheading the assault for a more definite disassociation between these two oft-linked contingents.

Neil Ramon Tombridge Rudolph James Gering St. Louis, Mo.

Racing is racing and skill is skill. If automobile racing is to grow in this country it is more necessary to hang together now than to hang separately later. Ed.



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### SPRITELIER

I have just purchased an Austin-Healey Sprite and I hope to have it in shape to race by Spring. It is my second sports car and I am just a beginner, so please bear with my questions. I am interested in how to get started in racing and in suggestions that will make my Sprite git-a-long a little faster, though I am limited in funds to about \$200.

Would a supercharger help? How about a cold air box for the carbs? Would dual pipes help? Do you have any suggestions about mufflers?

Don Johnson Portland, Oregon

If you're interested in staying "stock" with your Sprite (or any other production sports car, for that matter), you must first determine what the rules allow. This may sound rather obvious, but the many organizing clubs have as many ideas about the meaning of "stock".

Varied they may be, but just about all of them agree that adding a supercharger moves you up to the next larger displacement class, not to forget that it makes you

"modified" anyway.

As to dual pipes and mufflers, the SCCA, who come the closest to setting national standards, take a very lax view here. They permit absolutely any exhaust system you can devise beyond the exhaust manifold itself, provided only that the gasses are carried aft of the cockpit. So everyone runs straight pipes and so should you. Spectators like them, whether or not the cars go faster, they certainly make more noise, Drivers like them too, it saves looking at the tach.

When you've decided which club's rules you will go by, then by all means exploit the loopholes to the limit of your finances and ingenuity. In our December issue, we covered the picture of factory available options pretty completely.

At this point, we still aren't sure what Donald Healey will think up for the Sprite, although the possibilities are vast. In January, we showed one modification, but to the best of our knowledge, there isn't a club in the country which would consider that particular Sprite stock any more.

### LOTS WIRES

I just got your March issue and enjoyed it immensely. One question that I hope you can answer is: Where can I get a set of wire wheels like the ones on the Sadler Mk III? I dig all them crazy spokes.

Christopher Thomas New York, N.Y.

The wheels are available from Dayton Wheel Products Inc., 300 South Monroe Street, Xenia, Ohio. Hub adaptors are made to fit the bolt circles of many cars. Incidentally, the wheels on the customized Corvette shown on page 22 of the March issue are also Dayton products.



### THE CAUSE AND THE CURE OF CORVETTE FEVER

by Chevrolet

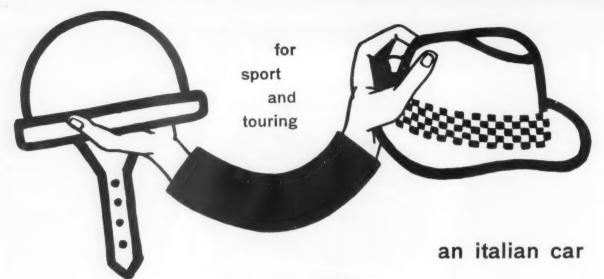
The victim's symptoms are easily recognizable: increased rate of respiration, a far-off look in the eyes, incessant sharp shifting motions with the right hand accompanied by unconscious "ro-o-O-O-O-O-M-P" noises in the throat, an ineffable smile and frequent ejaculations of "Oh, man!"

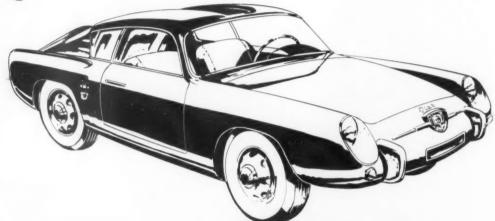
These symptoms occur almost immediately after initial exposure to a Corvette on the open road. Expert diagnosticians believe the combination of razor-sharp steering and fantastic roadability, plus the tremendous elation provided by the Corvette V8 engine, produces a

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profound emotional change in individuals unaccustomed to a car that handles like quicksilver-on-wheels.

Unfortunately, there is no real cure; even though the patient is carefully kept from further exposure, he tends to relive his experience, to recall the initial excitement of a genuine sports car, the pulse-stirring precision of control. The only practical solution is to provide him with a Corvette for daily use. True, he isn't cured—but, boy, is he happy! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.





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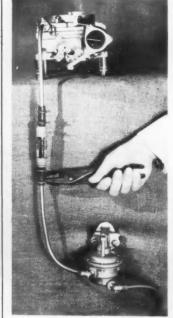
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Left-A space-saving cigar-shaped gasoline filter designed for installation directly into the fuel line of any automobile has been introduced by the Carter Carburetion division of ACF Industries. The unit is known as the Carfilter and contains both a fine ceramic filter element and a magnetic trap. If the filter becomes clogged, a by-pass valve will allow the engine to run until the filter can be replaced, Available at most automotive parts shops at \$3.95.



Above-Norm Thompson, 1311 N.W. 21st, Portland 9, Oregon, sells these driving gloves for \$7.50 per pair. The glove is made of South African goatskin with palm reinforcement of pigskin. They are ventilated for summer use, and have a snap fastened wristband.



Above-Columbia Motor Corporation, 419 E. 110th Street, New York 29, N. Y. offers a 100 page catalogue of parts for French, German, Italian, and British cars. In addition to replacement parts, the catalogue lists accessories, tires, and tools.



Above-The Blaupunkt "Frankfurt" is an AM-FM pushbutton radio featuring nine tubes. The unit is available for either six or twelve volt systems and is easily installed in either foreign or American cars. For information write to the Robert Bosch Corporation, 40-25 Crescent Street, Long Island City, N. Y.

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Another first for our roving recording crew. England is the home of some of the world's most famous vintage racing machines. Hear for the first time such legendary engines as the E.R.A., Delage, V 16 Maserati, 51 Bugatti, P3 Alfa Romeo, Alta, Frazer-Nash Boulougne etc., recorded revving and at speed with on the spot descriptions by world renowned racing authority David Scott-Moncrieff. Available in both monaural and stereo versions.



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DATE and EVENT

LOCATION

April 11-12

USAC Sports Car Race

V.I.R. Marlboro, Virginia

April 11-12

SCCA New England Region Limerock. Driver's School

Connecticut

SCCA Southern Illinois Region Invitational Rally

April 12

April 11-12 Sports and Touring Car

Oulton Park, England

race April 11-12 Roche Hill Climb

Belgium

April 11-12 Formula I & II

Montlhery, France

Sports & Touring cars April 17-19

SCCA Southern Arizona Great Canyon Rally

April 18-19 SCCA Washington Marlboro Nat'l Race April 18-19

Marlboro, Virginia

Stuttgart, Arkansas

Sports car race April 19 SCCA Northwest Shelton Race

SCCA Arkansas

April 19 SCCA Kansas City Trials and Rally

April 18 Formula I race Aintree, England

April 19 Tour of Sicily April 18-19

Sicily

SCCA San Jacinto Sports car race

Galveston, Texas

April 25-26 Sports car race

SCCA New England Lime Rock. Connecticut

April 26 Grand Prix of Syracuse

Italy

April 26 Val-Suzon Hill Climb

France

April 26 Halle-Seale-Schleife Formula III race April 26

East Germany

Rebasada Hill Climb April 27-May 2 Tulip Rally

Spain Holland

May 2-3 SCCA-Detroit P.O.R. Rally

May 2-3

SCCA-Danville National race

Virginia Int'l Raceway

May 2-3 SCCA-Los Angeles Sports car race

Del Mar California

May 2-3

SCCA-Pan American

Hillclimb

(Continued on page 20)



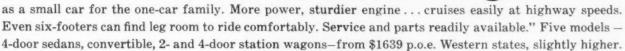
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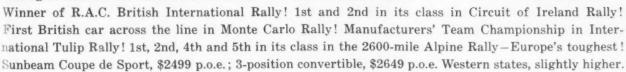
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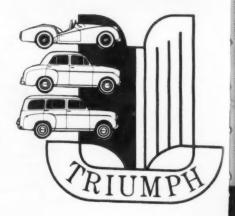
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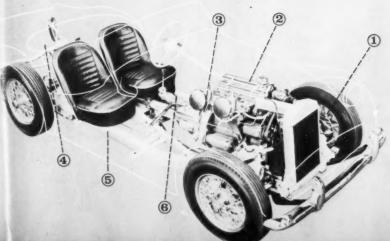
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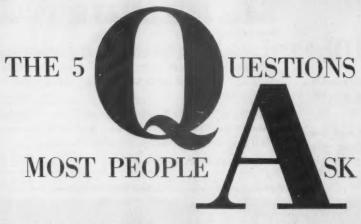


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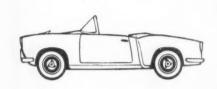
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STARTING WITH the MG TC, cars of foreign manufacture have become increasingly popular in this, the land of milk and money. At first regarded as sporty cars for sporty people, this feeling has been changed by the influx of numerous makes and models of economy sedans. The great awakening has now taken place, as many people of average income and intelligence have come to recognize the imported sedan as a dependable means of practical transportation. This acceptance is all the more important as these cars are not sold exclusively to wild-eyed enthusiasts nor to family-frustrated sports car bugs, but to average consumers who for some reason or other prefer them to the larger domestic items.

What are these reasons? It is difficult, if not impossible, to pin them down in a few words and pictures. It could be that today's driver is willing to trade his overgrown status-symbol for ease of parking. Or his turnpike speed for maneuverability in traffic. Or the cost of lengthening his

garage for another year's supply of gas.

Whatever the reasons, increasing numbers of our countrymen have made such trades, and just as in Detroit, there are already three imports that definitely lead the field. They are the German Volkswagen, the French Renault and the English Ford. But unlike Detroit's, the Big Little Three are as unalike as can be. They come from three different countries, they were designed in three different decades and they represent three different answers to the same design question: How do you transport four people and some luggage (or two with quite a lot) at adequate speeds, in adequate comfort and at reasonable cost? The key words of course are adequate and reasonable, and the difference in the interpretations given by the various designers reflects the slight difference in the needs of the nations which produce these cars. Great Britain is cursed with thick traffic and has a network of smooth but twisty, narrow roads. France has little traffic except in its cities and an impressive highway system that encourages fast cruising. Germany combines an atrocious secondary road system with its fabulous Autobahnen, predecessors to our turnpikes and thruways. In each of these countries, as elsewhere, the designers have come up with cars appropriate to their surroundings.

That such a variety of solutions should be successful in the United States is a sharp rebuke to Detroit's creed that "What America wants, America gets, in an American-made car."

A most logical way to evaluate these cars is to follow the usual sequence of events leading to the final purchase. Assuming you are in the market for a foreign car, the first thing you will do is look at them. Styling then is the initial

impression.

Of the three cars tested, it is safe to say that the Renault Dauphine is the most attractive. Aesthetics being a rather subjective matter, we tried to base our opinions on the accepted "norm" of good styling. It must be remembered that the basic purpose of these cars is to provide comfortable transportation at legal speeds for four people on short to medium-length trips. For this reason streamlining is somewhat superfluous except when used in an attempt at a pleasing shape, and for achieving aerodynamic stability.

The Dauphine's length/width/height ratio and the size of its wheels give the car a pleasing proportion that, when viewed by itself, makes it difficult to tell the car's actual size. One of the most obvious control factors in determining scale is the relative size of the items that accommodate the human form, which for all practical purposes remain standard. Thus, a car with big doors and a high percentage of glass appears to be smaller than one with narrow windows and small doors. Because of the four-door configuration of the Dauphine, each door must necessarily be smaller than on a two-door with the same interior dimensions. The side windows too, compared to the other cars in this report, are more narrow while the inward tilt (tumble-home) is greater. Another scale factor is the proportion, when viewed from the side, of the area enclosed by the windshield, roof, rear window, and lower edge of the side windows as compared to the side area of the entire car. A large American car, if scaled down to a length of thirteen feet while maintaining all other proportions, would be uninhabitable by more than two people. The Dauphine, with its more slanted and curved windshield, large rear window, and narrow slanted side windows, maintains a proportion that makes the car look large while being small.

As to other matters aside from scale, the Dauphine again comes to the fore. The rear-engine placement allows the elimination of an air intake in front resulting in a smoother look. In order to conform to the accepted shape of an automobile, the hood has not been dropped (or drooped) which allows for a truly cavernous trunk. The cooling air for the engine is scooped in at the leading edge of the rear fenders. This solves the problem of how to break up the slab-sided look of an automobile without resorting to an arbitrary and perhaps objectionable use of chrome. In overall shape the Dauphine is smooth, pleasing, and not at all

controversial.

The Ford Anglia is a more straightforward approach to the problem of encasing four human beings in a fourwheeled vehicle. No attempt has been made towards aerodynamic efficiency . . . streamlining being secondary to interior space. The car is basically a large box, with a smaller one perched on top. The small wheels and considerable ground clearance lend a top-heavy look which results in an awkward, somewhat cumbersome appearance. The almost vertical appearance of the windshield and side windows does nothing to detract from the boxy form of the car but does of course increase interior room. A rectilinear format is apparent in most of the detail work as well; grille, headlight-parking light group, windshield, and wheel arches. A simple horizontal chrome strip decorates the flat area of the side. Taken as a whole the Anglia is a boxy little car, with a little car look. It is not unattractive, but it will never set the styling world on fire.

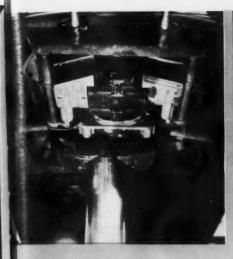
The last car of the group, and the most puzzling from a styling point of view, is the Volkswagen. Not a pretty car



Most domestic cars are sold on external appearance—if not mere surface glitter. Imports on the other hand, seem to get a closer examination from prospective buyers. Whether this is due to their novel—to American eyes—engineering or just plain curiosity on the part of foreign car buyers it would be hard to say. This being the case, SCI poked a camera under the three leading light cars to see why people were risking slipped discs to get a peek underneath. Only surprise to us was the addition of a Karmann-Ghia anti-roll bar to the Volks. If you're a frustrated sports car bug, it's the best option money can buy. It also improves handling while driving on the ragged edge.

by anyone's standards, the Volkswagen nevertheless has a quality like that of a homely puppy, it just grows on you. Much of its appeal is discovered only after driving the car, when styling has become secondary. Fortunately, for in this area the VW comes in pretty far behind. That it is an honest approach must be admitted. The rear engine makes an extended hood unnecessary and, aside from decreasing storage space, the droop snoot greatly increases visibility. The shape of the fenders is in keeping with the rest of the car . . . it is hard to imagine how a VW would look with any other kind. In addition, the individual fenders and the running boards break up the monotony of the side which otherwise would be very unpleasant. In the interest of economy the rear window has been kept rather small. Placed where it is, on the shallow slope of the rear deck, it affords limited visibility to the rear. The windshield is flat and comparatively small in area, surrounded by thick windshield and door posts that give a rigid appearance but again limit visibility. That the Volkswagen has been designed from a practical standpoint is obvious in the use of external door hinges, heavy gauge metal formed in simple curves, and the use of creases in the surfaces of hood, engine cover, and roof in order to add rigidity and a modicum of trim.

As mentioned earlier, streamlining plays a part in economy car styling only as applied to appearance and stability in cross winds. A head wind will slow the car but in time







Volkswagen

Renault

**English Ford** 







it is nearly balanced by tail winds that lend a helping hand. It is side forces that are most disturbing while driving, and are a factor in driver fatigue and, ultimately, safety. Sensitivity to lateral forces is a cross that a little car must bear due to its light weight and comparatively extensive side area. As long as people of normal size must be carried in a vehicle of limited length there must of necessity be an increase of height and area as compared to vehicle weight. Thus, the difference in wind-stability between the light car and the average American car is, in exaggerated form, akin to the difference between a rolling balloon and a rolling cannon ball. Improved lateral streamlining would help, but the still unresolved problem is one of passenger accommodation and resulting area.

This brings us to the next item in our inspection; the interior. The three cars tested are all four-passenger sedans, one of which, the Dauphine, has four doors as well. We will not discuss the relative merit of numbers of doors, as that is a factor of personal preference determined by extra cost and how often the back seat will be used. (The Prefect s a four-door version of the Anglia, it costs \$53-100 more.) What concerns us here is the comfort of the driver and passengers once they are inside the car.

The doors on the Volkswagen are wide, with no obstrucions to knees or head when entering. The inside door andle is well to the front, near the hinged edge, and rovides little leverage for pulling the door closed. This, plus the fact that the VW is very tightly sealed, makes it almost mandatory to open a window slightly before closing the door in order to allow air to escape. The front seats are individual, but not of bucket shape—comfortable but with no lateral support. The position is upright when compared to sports car standards, but should be no trouble to those used to American car seats . . . in fact, most new domestic seating is even lower. The backs of the front seats are adjustable in rake, the seat back resting on one of three faces of an eccentric adjustment knob. Fore and aft travel is abundant with five slots on the rails taking care of all but the most lengthy of legs. Upholstery is of imitation leather.

Engine in the rear allows a floor relatively clear of transmission and driveshaft tunnel but in the VW there is a huge ridge running the full length of the interior. This is an essential stiffener for the platform frame and houses the shift linkage, wires, controls, etc., that lead to the rear. Even with this obstruction, there is still ample room for pedals between the tunnel and the front wheel well. The early roller accelerator has been replaced by a conventional pedal that is far more comfortable and precise. Rubber mats cover the floor while the wheel wells are done in tweedy carpet. The insides of the doors are faced with the same fabric and color as the seats, and there is a map pocket in the driver's door.

The heater utilizes cooling air that has been warmed by

its passage over the engine. The air follows ducting under the door-sill and a duct contained in the aforementioned tunnel is regulated by a valve placed just behind the gearshift lever. It enters the interior at the lower corners of the windshield and through vents on the floor. In cold climates the heater fights a losing battle, while in the summer it is impossible to de-mist the windshield without filling the car with unwanted heat. There are no cold air inlets of any sort save the windows. The side windows require three turns of the crank for full travel, and the vent panes will swivel far enough to act as air scoops. The rear quarter windows are fixed.

The rear seat is fairly comfortable provided the passengers are not above average height and girth. Leg room with the front seats all the way to the rear is somewhat limited, while the slope of the roof is a bit too close to the skull for comfort on bumpy roads. Passengers are provided with an ashtray on the right side, a dome light on the left, assist straps and coat hooks on both sides, and padding along the roof line above the windows. The rear of the seat folds forward providing access to the rather large luggage compartment behind. Under the seat, encased in a small metal box, is the six-volt battery. A bit of a fuss to service, but it is isolated from weather, engine heat, and dirt.

The Renault Dauphine has the advertised advantage of four doors, but because of the limited length of the car the doors themselves are relatively narrow. This makes entry slightly more difficult than on the VW but if the back seats are to be frequently occupied, the rear doors become a welcome addition. The front seats are individual and somewhat small, but quite comfortable. Leg room is just barely adequate even when the seat is in its most rearward position. The wheel wells seem excessively large and force pedal placement further toward the center of the car. This results in a peculiar "sideways" driving position that, if the driver's legs are fairly long, tires the right leg on prolonged

The three speed gearbox is actuated by a floor-mounted shift lever that feels somewhat as if the linkage is composed of elastic bands. Once one becomes familiar with the system, shifts may be made accurately and quickly but the lack of a definite gate can make things confusing at first.

The Dauphine's designers paid careful attention to many small details that add greatly to driving pleasure. The heater works well and the defroster duct extends the full width of the windshield. When operating full blast, the defroster will actually melt ice on the windshield under normal snowy conditions. The heating system has an outlet at the rear seat also, conrolled by a little door. Two glove boxes are provided, both without doors, and one of which is little more than a joke. It will hold a pair of gloves, but not much else.

The back seat is rather high and upright, but there is a surprising amount of headroom both above and to the sides. The floor under the front seats is lowered, providing ample room for the rear passengers' feet. Legroom, due to the limited travel of the front seats, is adequate. There is no ashtray provided in the rear but at

least the rear windows slide open.

The Anglia is the most American-like car of the three, which is logical since it was designed here.

Stepping into the Anglia is no problem as the doors are wide and the seats are high. The front seats are individual and provide good support for the thighs but not much lateral support. Leg room for the driver is ample, but when seat is placed in its most rearward position it infringes slightly on rear passenger leg room. Pedal size and placement will accommodate even large feet and there is no particularly strange feel to their operation; they pivot at the top and move smoothly.

The three-speed gearbox has a normal American pattern and is actuated by a floor-mounted lever. Contrary to the Dauphine, the Ford pattern has a narrow neutral gate but comparatively long throw into the gears. On both Anglias tested it was a bit difficult to change from first to second, but the cars were very new and would probably have loosened up after a few thousand miles.

Upholstery is vinyl plastic over foam rubber and is two-toned to complement the exterior color of the car. The headliner is a cloth-like woven plastic that is rich looking and washable. There is no dome light other than a light, contained in the rear view mirror housing, that is switch operated and not automatic.

The back seat provides ample comfort for two due to the headroom allowed by the square shape of the roof. Legroom is there, but can be minimized by moving the front seats back. Two ashtrays are provided, one on each side, which eases the disposal of ashes since the rear windows are fixed.

Having looked a car over carefully, kicked the tires, opened and shut the doors, and tried the seats and pulled the knobs and twisted the wheel, the next thing a likely prospect might do is ask which end has the engine.

Indoctrinated by Detroit's mutual conformity, consumers perhaps expect conformity from the European manufacturers, too. But this they do not get. It is strikingly proved by running down the key engineering features of the Big Little Three (which any alert salesman will do at the drop of a brochure).

Engine Location: Ford — front; VW and Renault—rear

Engine Type: VW-air-cooled opposed; Ford and Renault-water-cooled in-line Front Suspension: VW-trailing arms, torsion bars

Renault-unequal wishbones, coil

Ford—McPherson struts, coil springs Rear Suspension: VW—swinging half axles, torsion bars

Renault—swinging half axles, coils Ford—rigid axle, leaf springs Transmission: VW—four-speed Renault and Ford—three-speed Number of Doors: VW—two

Renault—four; Ford—two or four When the various competing makes differ in technical detail, then there is good reason for the buying public to be interested in what the differences are, why they exist and how they create an advantage. Naturally, all salesmen will try to make capital out of any distinctive feature, even while his opponent down the street is saying what a terrible that feature is. While this situation may be summed up with the thought that one man's poison is another's meat and a reminder that compromises are inevitable in automotive design, it might pay to look at this from the designer's point of view. To him, there are three reasonable configurations to consider:

Front-engine, front-wheel-drive Front-engine, rear-wheel-drive Rear-engine, rear-wheel-drive

Of the three then, he might note that placing the engine next to the driving wheels eliminates the driveshaft and the associated tunnel in the floor. But if all this is at the front, then the driving wheels must also steer the car. This requires some rather expensive bits and pieces, not to mention the problems of variations in handling between power-on and power-off. These problems can be solved satisfactorily, but it ain't easy.

With everything at the rear, independent suspension on all four wheels becomes a virtual certainty, as you can't very well have the engine and gearbox bouncing up and down with the wheels.

This drastic step, (which has erroneously been dubbed "four-wheel I.F.S." on at least one occasion), may be more responsible for the success of economy cars in the USA than any other single feature.

Why? Because on certain surfaces these cars can carry their passengers in greater comfort than the most handsomely appointed but conventionally suspended Detroit luxury wagon.

But like the front-wheel drive problems, independent rear suspension brings problems of its own. The Volkswagen, designed in the Thirties by one man, is probably the worst offender in this respect. Its body shape, probably considered quite avantgarde at the time, contributes to an oversensitivity to cross-winds. Combined with its quick steering, the VW seems quite a handful to "new" drivers. And when pressing on, "Beware the Dreaded Oversteer" is the order of the day. Although tail-heaviness is one cause, the "bent wheel look" is the major one. One or two heavy passengers in the back seat will deflect the rear torsion bars enough to make the camber go negative, thus postponing the onrush of the D.O. Resetting the torsion bars provides a more permanent cure, especially if heavy loads are not to be carried in the

The Renault Dauphine seems less sensitive to both cross winds and passenger loads but responds equally to treatment of its rear coils. One turn may be cut off, making the spring stiffer too, or else the spring may be reset to a shorter free length through judicious heating (i.e., in an oven, not with a torch).

A disadvantage of both swing-axled cars is that when cornering too hard over large undulations, the camber change as the rear wheels bounce up and down may cause the outside rear tire to lose its grip at full rebound. Air-minded drivers refer to the maneuver which may result as a ground level snap roll... not to be recommended

(Continued on page 93

## ROAD TEST: AUSTIN 40





The A-40 marks a new approach to small car design. From some angles (left) it looks no different than other tidlers. Tailgate trunk opening (above right) makes all the difference in usability of stern space. Recessed steering wheel locks out of place in car sporting floormounted stick shift.

IS HARD to figure out just how to categorize BMC's latest offering, the Austin A-40. It's not quite a sedan and despite its squared off tonneau lines it isn't a station or estate-wagon either. There is no neat pigeon-hole for it and it doesn't replace either of its BMC cousins the A-35 and the Morris Minor, the first being slightly smaller and the second being a shade larger in all but interior dimension. It is a compromise that might best be described as a "suburban" without cenoting the snobbery of commercial disunction that heretofore has gone with that definition. Another way of describing it would be to call it a Sprite sedan for wasons which we shall go into later.

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The A-40 is the first of the new Pinin Frina inspired styling changes that will a pear throughout the BMC line in the ar future. The obvious purpose was to combine as much interior room as possule in the smallest practical package

suitable for the world market and to do it without the engineering and structural problems presented in the full estate wagon design.

That the designers have succeeded in what they intended is obvious and, thanks to Signor Farina they have done it with a simplicity of line that is one of the car's most attractive features. There are two added advantages to the design aside from esthetics. The extended roof line gives far more head room in the rear despite the fact that the overall height is two and a half inches less than that of the A-35, and the resulting large back window gives almost uninterrupted vision to the rear. The one major disadvantage is that the rear window is fixed and cannot be opened outward (or at all for that matter) as in a true wagon. This is caused by the problems inherent in the unit body-chassis design in which considerable extra (and weighty) stiffening would be needed to

offset the weakening caused by a full height opening at the back. Consequently the rear opening is roughly one-and-onehalf that of a wagon and like that lower half, the lid drops downward to form a tail-gate, albeit not very firmly braced except by the hinges. Further (and this is more a detail design fault than an integral one) the back seat, which folds forward, does not lie flat nor does the bottom of the seat fold forward to protect the back of the front seats. Thus, while the interior space is tremendous for so small an automobile its usefulness is limited by the access and by the large hump created by the folded seat. Packages the size of a foot locker and on down can be stuffed into the car ad infinitum but don't expect to cart Aunt Nellie's antique rocker home in it.

Aside from that, there is much about the A-40 to delight the small-car and even

### AUSTIN A-40

List	Price, POE			0	0	0 1			\$1795 Hambro Automotive C	Corp.
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### PERFORMANCE

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TOP SPEED:

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IV		0			0	0	0			0	0	0	0	0	۰		0		0	0	0	0			20-top	
SPEE	D	H	0	1	И	E	1	E	R	1		C	0	F		RI	E	C	T	1	C		N	l:		
Inc	di	e	a	ton	e	d	-	S	p	BI	BI	d													Timed 1	

FUEL	-	ONSUA	Al	P	T	1	C	)	N	0						
Har	d	driving													30	mpg

### SPECIFICATIONS

### POWER UNIT:

A		
BMC "A" ser	s In-line, water-cooled i	fou
Valve Operati	ns pushrod ohv	
Bore & Stroke	2.48 x 3.00 in (62.9 x	
Stroke/Bore	atio	a)
Displacement	57.8 cu in (948 cc)	
Compression	atio	
Carburgtion b	One Zenith down dra	ft
Max Power	38.5 bhp @ 5000 rpm	
Max. Torque		

### DRIVE TRAIN:

Tra	n	8	n	i	8	8	ie	110	8	1	rı	RÍ	ti	0	8									OV	erall ratio
I	-														٠								3.60		(16.51)
II													٠					۰			0		2.41		(10.80)
III													۰			۰	0					۰	1.41		(6.43)
IV													۰						0	۰	٠		1.00		(4.55)
Fin	a	1	d	h	ń	v	е		r	n.	ti	0					۰			۰	۰		4.55		
Aw	le	1	te			12	84		-	n	k		m		h	w							leaf	springs	

### CHASSIS

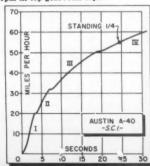
Integral body-frame of spot-welded steel stampings
Wheelbase
Tread, front and rear 471/2, 47 in.
Front Suspension Coil and lower wishbo
upper control arm
Rear Suspension Rigid axle, semi-ellipti
leaf springs
Shock absorbers Armstrong lever-type
Steering type
Steering wheel turns L to L 2
Turning diameter, curb
to curb
Brakes Lockheed, hydraulic f
"hydro-mechanical" r
Brake lining area
Tire size

### GENERAL:

Length		۰							0	0				0			0	0	0	a	0	144.3 In.
Width												۰			۰							59.4 in.
Height										ì												56.8 in.
Weight		e	:11	ıĸ	b	Ĺ				ì	ì	ì										1680 lbs.
Weight		8	18		ti	es	t	ec	ĺ													1980 lbs.
Weight		d	i	11	K	il	31	rt	i	91	n.		1	7	1	R						
as te	81	te	ed	ĺ																		55/45
Fuel ca	n	9		i	έs	r																7.2 U.S. gallons

### RATING FACTORS:

Specific Power Outp	ut	0.6	7 bhp/cu. in
(as tested) Piston speed @ 60 n		51	.4 lbs./hp
Braking Area		77	sq. in./ton



the sports car enthusiast. The interior is pleasantly laid out from the driver's and front seat passenger's point of view. There is the usual package shelf below the dash that has become a BMC trademark andmore unusual-a lockable glove box. The semi-bucket seats are not uncomfortable and have considerable fore-and-aft travel to accommodate all sizes of customer. The dash board is plain but adequate in instrumentation and small controls, with one exception. The speedometer is the main instrument set off by a fuel gauge which is bracketed by a turn indicater light and an oil-pressure warning light, all in the same cluster. Centrally in the dash are three switches, one for the windshield wipers, one for instrument lighting and the central one the exception noted above -the turn indicator switch. This last item is non-self-cancelling and is a bit of a reach-it is legal and useable but that's about all.

Somewhat strange at first but very definitely a neat idea is the actuation of the side windows in the doors. These are counter-balanced in such way that they need no winding handles at all. Each window has a small glass tab bonded to it and that is the only actuating mechanism in evidence. All one does is to push the window to the desired level and that's that. If more positive locking is needed a pull on the inside door handle toward the rear locks the window pane in place at any level. Of two cars sampled, one set worked well and on the other car one worked and the other wouldn't quite stay closed-it would lock in place but at its topmost position tended to rattle and jiggle up and down about a quarter of an inch even when locked. This again is a detail but one which might prove annoyingly troublesome both to customers and dealer service people. If, however, they are or can be made to be foolproof, these windows make sense; they're light and they represent a very sensible economy to be passed on to the eventual buyer.

The pedals are rather nicely placed and widely enough separated so that one's feet don't collide with each other in traffic or in more exuberant country driving. The throttle is close enough to the clutch so that heel-and-toe work is not out of the question. The gearbox is one of the nicer items in the car, being so similar to that of the Sprite with its short throws and stumpy lever that its four speeds are a pleasure to run through. The ratios are evenly enough spaced so that rapid acceleration through the gears is possible as is quick downshifting for corners and intermittent traffic.

How does it go? Very nicely, thank you. It is this factor which called forth the appellation of Sprite sedan from more than one member of the staff. It is easy to get exuberant with this car. The willing little 948 cc BMC A-type engine whips up the scale with enough sizzle to lead us to question the Hambro Service people quite closely concerning the stock condition of the car. With only a driver aboard the performance of the test A-40 was very close to that of the speed-kit equipped cars of its class reported on elsewhere in this issue. The willingness to rev up to the limits imposed by restricted intake and exhaust plumbing enables an enthusiastic driver to push the car to about 22 mph in low, 35 or so in second, roughly 55 in third and a top of a true 78 in high gear. Thanks to the very quick gearbox these speeds can be reached quite quickly on a level road from standstill. In fact the gear speeds can be changed rapidly enough so that the clutch does not bite fast enough to take full advantage of the the speed of the shift, even though the clutch action is quite abrupt in its behavior.

The only problem was starting from cold which may have been caused by tune more than anything else but which has been reported by others as well as being experienced by ourselves. Getting the little engine fired up on a cold day proved uncertain. The key-starter switch set the starter motor into busy operation but not the engine. Playing with various choke and throttle settings finally produced response in all but one case. When warm, though, it came to buzzing life at one flick of the key.

Handling characteristics are definitely up to the performance of the car, being also very Sprite-like in style. The steering is rapid but not disconcertingly so at 2.3 turns lock-to-lock and it telegraphs road feel in just the right amount. The car can be whipped in and out of holes in traffic with extreme agility, enabling the driver to find routes not available to more ordinary machinery in urban crowds. It is on country lanes that it comes into its own for the enthusiastic driver, though. A man who is willing to use the gearbox and adequate brakes to advantage can make amazing time over secondary roads. The car will also cruise quite happily at speeds of 60 to 70 miles-an-hour on turnpikes. taking long, fast turns with a delightful feeling of road-hugging security. On short but fast turns there is definite "sporting" feel that can lead to such pleasant enthusi asms as drifts and deliberately provoked tail-out slides if other are not present and one hasn't too many black marks on one driver's license.

All this Sprite-liness can beget thinking among the true believers. There are some 33 separate modifications available from the factory for the competition minded Sprite owner and on checking the list one finds that approximately 2 of these could be added to the A-40 either in whole or in part. The result could be extremely attractive to the man who would like a sports car but for financial family or space reasons cannot afford one Such niceties as Alfin brakes, or dis brakes, coupled with stiffer front springs revalved shock absorbers and Sprite sway bar could make the fine handling even finer. When run in combination with balanced engine equipped with items like the optional Sprite head, dual 11/4 inc manifold, optional exhaust system, hig compression pistons and light flywheel among other options-the result could be very sporting indeed.

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Soup-kitchen work aside, though, is stands the new A-40 is one of the mo-t in teresting and interesting looking mal cars to come through in years. With it handsome looks and very excellent use a space available to create its cave now interior it is hard to see how the ca ca miss.

MUSHROOMING SALES OF SMALL CARS IS THAT A NATIVE BUYER CAN—FOR THE FIRST TIME IN SOME 40 YEARS—PICK AND CHOOSE FROM OVER 30 DIFFERENT MAKES OF VEHICLES.

THE FOLLOWING PAGES, CONTAINING PROFILE DRAWINGS ALL TO THE SAME 1:50 SCALE, COMPLETE SPECIFICATION CHARTS, AND PRICES

—PLUS COMMENTS BY THE STAFF ON THE MORE POPULAR CARS, SHOULD PROVE TO BE A HANDY GUIDE FOR PROSPECTIVE BUYERS.

Renault **English Ford** Morris Minor Volkswagen Datsun 1000 Metropolitan Skoda S-440 Wartburg Simca Triumph Hillman Fiat Austin A-40 Rambler American Saab 93-B Studebaker Lark Goliath 1100 Opel Vauxhall Toyopet Panhard DKW-Auto Union Taunus Peugeot Ford 6 Plymouth 6 Volvo PV544 Chevrolet 6 Riley 1.5 Moretti Borgward

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1600 2000 2200 2400 BUYER'S IMPORTED CARS HAVE BECOME THE PHENOMENON OF AMERICAN AUTOMOBILE MERCHANDISING. ONE SIDE EFFECT RESULTING FROM THE

31

For quality at below luxury car price the Borgward is hard to beat. Anyone of the four models—two "Touring Sports" types, a station wagon and sedan—impart a feeling of solid, honest construction and finish that one would expect to find only in automobiles costing twice as much.

Technically the Borgward is more interesting than its external appearance would suggest. The car has four-wheel independent suspension with the set up at the rear very similar to that used on early Mercedes Benz 300 SL coupes. Aiding and abetting this independence are four sturdy coil springs working in conjunction with telescopic shock absorbers. All of which makes the Isabella an outstanding car for long distance high speed touring. The car's compact size and smooth four-speed—all synchronized—gearbox make it ideal too for urban stop and go driving.

Both the standard and "sporty" models use the same basic body, however the faster car offers fully reclining seats as regular equipment.

The Borgward company can trace its history back to 1906. The original firm was the Hansa Lloyd Factory. This organization was purchased by Carl Borgward and his associates in 1929.

The car was introduced into this country in 1956. To date over 15,000 Borgwards have been sold. Future plans include introduction of a four-door sedan and a semi-automatic transmission using an electric clutch.

Although Borgward dealers are fewer in numbers than those handling other imported sedans the company follows a policy of granting a large enough territory to enable a dealer to make a fair profit. This business-like arrangement serves to attract and hold stable dealers, who in turn offer good after sales service.



### CITROEN ID 19

The less expensive, and perhaps more practical, model in the Citroen line is the ID 19. Similar in outward appearance to the DS 19, which in turn is similar to no other car on the road, the ID has fewer automatic conveniences, and therefore costs fewer dollars.

One of the outstanding features of this car is the hydropneumatic suspension system which is self leveling to compensate for varying loads and, by means of a lever on the left side of the driver's seat, may be adjusted to varying ground clearances . . . full range being from three to thirteen inches.

Power steering is absent on the ID 19, which on other cars wouldn't make much difference, but in the case of front wheel drive does much to ease the amount of muscle required to turn the front wheels against driving torque. This makes itself felt only during full-power tight radius turns and when parking.

Driver and passenger comfort seems to have been uppermost in the designers' minds when they laid out the interior. The flat floor allows maximum foot room and the seats are deep and comfortable. Both front seat backs recline, independently, and are quite satisfactory for short naps during long trips. Speaking of long trips, the trunk will accommodate all that is necessary with a bit to spare.

### BORGWARD



The products of Japan have acquired public acceptance in this country during the past few years, especially the products of the optical industry, but it is a matter of conjecture whether or not they will find a place in the imported car market. Their entry into the "basic transportation" class is the Datsun 1000, a car of basically English design but with all parts and assemblies built in Japan.

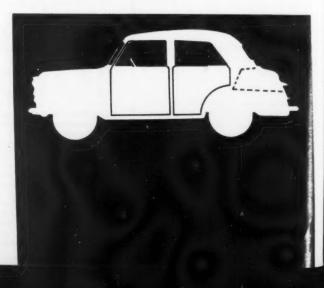
The body of this four door sedan is boxy and high, but is very solid and free from rattles. Passenger room is ample even in the back seat, but the driver has a slightly harder time of it. The seat is a bit high, giving maximum visibility but a minimum clearance at the steering wheel. Entry and exit are made somewhat difficult by the placement of the handbrake to the left of the seat.

The engine develops 37 bhp which is just barely adequate for the total car weight of almost 2400 lbs. Well chosen gear ratios do their best to equalize the battle, but performance is at best mediocre. The gear shift incidentally is column mounted and has a reversed pattern similar to that of the Hillman.

A sturdy but primitive suspension is used consisting of a solid axle and leaf springs at each end. This, combined with a short wheelbase, produces a choppy ride on all but the best road surfaces. Its only advantage seems to lie in its ruggedness and simplicity.

This ruggedness is carried through in the entire automobile and should suit the Datsun perfectly to use as a second car, where it is not planned to trade it in every few years. It will last and last.

### DATSUN 1000



### **DKW-AUTO UNION**

The tail-wagging tornado of the '30's continues on in name only in the form of an economy sedan known as the Auto Union 1000. The A-U of today is basically a bored-out DKW with the same body and slightly different trim.

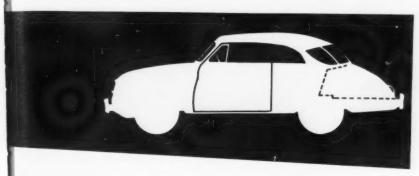
Both cars utilize an in-line three cylinder engine of twocycle design. Three cylinders firing on each stroke equals six cylinders firing on every other stroke; hence the DKW's suffix 3-6. The Deke engine has a displacement of 896 cc while the overbored version in the A-U displaces 980 cc's. This increase, plus a higher compression ratio, adds 16 bhp to the DKW's 45.

The column-mounted shift lever has a reversed pattern; not like a regular four-speed box, not like the Hillman, but one that is exclusively DKW. Second gear is low enough to allow smooth starts on a level road, third has a speed range

from 10 to 70 mph-good for passing, and fourth allows economical cruising and a top speed of a shade over 80 mph. As an optional extra the DKW and Auto Union may be equipped with Saxomat drive which does away with the clutch and allows gear changes to be made merely by moving the shift lever.

As mentioned before the only difference in bodies between the two cars is one of minor trim. The shape is functionally designed and is carried through in all models - two-door, four-door, and "Universal" station wagon. The wide flat floor gives lots of foot room. There's comfortable seating for all passengers. The four-door model is just about the biggest, roomiest economy sedan we've seen.

It takes a bit of familiarization to get used to the frontwheel-drive characteristics but once mastered, the DKW and Auto Union cars can provide many pleasant miles of driving.



In fourth place in number of sales are the Fiats. Although the Fiat line includes cars of varying displacements ranging from 500 to 1900 cc's, we are concerned primarily with the 1100 and 1200 models which are the competitively priced "full size" sedans.

The two cars are similar in size and design, the only difference being in engine displacement and detail trim. The 1200 can be considered the luxury model of the 1100. Four doors are standard on both cars; the 1100 having rearhinged front doors while the front doors on the 1200 pivot at the forward edge. The roof of the 1200 has a flatter shape and projects over the rear window slightly. Another mark of identification is a chrome plated ribbed panel between

the rear quarter windows and the rear window.

Both cars are conventional in chassis design having leafsprung solid rear axles and independent front suspension using swing arms and coil springs. The four-cylinder in-line engine is in front, driving the rear wheels through a fourspeed gearbox with column mounted shift lever. The engine in the 1200 has a displacement of 1221 cc and develops 55 bhp. The 1100 has an engine of 1089 cc and develops 40 bhp.

The interiors of both cars are roomy and comfortable. Four passengers will find ample head and foot room even with the front seat pushed all the way to the rear. The upholstery in the 1100 is of imitation leather while the 1200

uses a mohair-like fabric.

Standard equipment includes windshield washers, whitevall tires, oil filter, heater and defroster.

To date, approximately 30,000 Fiats have been sold in this ountry. The Fiat company, founded in 1899 is now the piggest industry in Italy, and produces everything from iron nd steel to cars, busses, trucks, marine engines, and jet ircraft.







### HILLMAN

Unlike some economy car manufacturers that seem to turn a deaf ear to the demand for Americanization of design, the Rootes Group, makers of the Hillman Minx, have steadily changed their styling and performance in an attempt to sell more cars in the U.S. Thus the new Hillman line has been "modernized" to a point just short of the addition of tailfins and wraparound windshield.

The Minx De Luxe is a roomy four-door sedan that will seat four or five passengers in complete comfort. The dash-board contains a neat cluster of instruments that is unfortunately placed in the center of the dashboard and therefore hard to take in at a glance. Under the dash is, a full width parcel tray. Interior trim is two-tone and complements the exterior colors.

In addition to the four-door sedan are a two-door convertible and an Estate Wagon. Both cars are similar to the sedan in appointments and trim. The convertible has a three-position top which may be fully retracted, open over the front seat only, or completely closed.

All cars are powered by a four-cylinder engine of 1494 cc, developing 52.5 bhp at 4,400 rpm. The four speed gearbox is actuated by a column mounted lever with a reversed pattern.

Suspension of all models is by wishbones and coil springs in front, and semi-elliptic leaf springs on the solid rear axle. Double acting tubular shocks are used all around. Brakes are hydraulic, with mechanical linkage on the hand brake.

One other car is offered by Hillman and utilizes the smaller engine of 1390 cc displacement. Known as the Husky, it is a station wagon of smaller dimensions than the Estate Wagon, and is designed to provide practical transportation at an economy price.

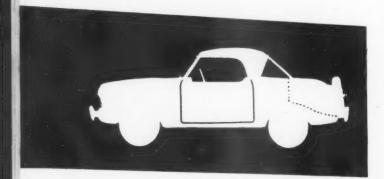
### **METROPOLITAN**

The Metropolitan is manufactured by the British Motor Corporation for distribution in this country by American Motors. The engine is basically that used in the MGA but because of the Metro's less sporting purpose is de-tuned in the interest of reliability. As it stands the engine develops 52 bhp at 4500 rpm and is sufficient for pushing the Metropolitan around quite briskly in urban traffic and on interurban expressways.

A dash-mounted lever actuates the three-speed gearbox the ratios of which are ideally suited to peppy performance and flexibility in changing traffic conditions. Second gear has a useful range of 2 to 52 mph, which is just about right for passing on medium-speed highways. Third gear will provide comfortable touring on all but the fastest of cross-country turnpikes.

The body is of unit-frame construction to assure rigidity and freedom from rattles. Two models are available, a hard-top and a convertible, both with two-tone paint jobs as standard trim. The car is specifically a two-seater with the rear seat designed primarily as a parcel shelf. In a pinch it could accommodate a small passenger, but the trip and the passenger would have to be short. The back of this seat folds forward to provide access to the lid-less trunk, and has a lock. The front seat is bench type and wide enough to seat three slim people.

Suspension is independent in front using coil springs and wishbones. The solid rear axle utilizes semi-elliptic leaf springs. With a wheelbase of only 85 inches and steering of 23/4 turns lock to lock, the Metropolitan is nimble in traffic and very easy to park.



## MG MAGNETTE MK III

It had to happen. With American styling becoming more popular (?) in Europe, and perhaps more acceptable in this country, many of the foreign manufacturers are changing their products. It must be remembered that the status symbol in other countries is the American car and a forgery is better than nothing.

The new Magnette now sports a set of tail fins, smaller wheels, more overhang, wraparound windshield, and in general a more American look. Styling was done by Pinin Farina who also designed the Austin A-40 body, and the Magnette now has a stretched-out-Italian look rather than dumpy-English. Some people might resent the change, but it does have some advantages.

Because of the smaller wheels, shorter wheelbase and more overhang, the car is now larger inside with more room



for luggage. Interiors are still luxurious, with leather upholstery, walnut trim, and deep carpets lending a rich note. The instrument cluster is contained in a shrouded panel directly in front of the driver and visible through the two spoke steering wheel.

Four doors allow easy entry to the individual seats in front or the wide rear seat. Leg and head room is ample due to a dropped floor and smaller wheel wells, and the rather square shape of the roof. A folding center armrest is provided in the rear, along with armrests on the doors.

The body is of unit construction to assure rigidity and freedom from rattles. Suspension is conventional; wishbones and coil springs up front and semi-elliptic coil springs in the rear. Shock absorbers are of the double-acting piston type.

The text above describes the new Magnette but, unfortunately, a drawing of the new car was not available at press time. The illustration is of the previous model.

## **MORRIS MINOR 1000**

Long before the mass immigration of European cars to the American road began, Morris Minors constituted the greatest percentage of economy cars. Two reasons for preference of the Morris over the other cars were its fantastic road-holding ability and the ease with which gear changes could be made. And they had to be made. The original engine just didn't have enough to allow hill climbing without a lot of help from the gearbox. In 1957 the engine size was increased to 948 cc and although the gearbox is still as smooth, it is not needed as often.

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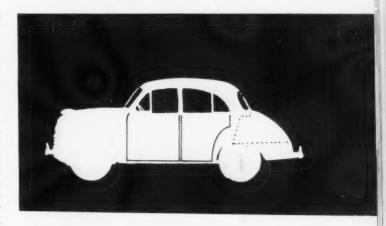
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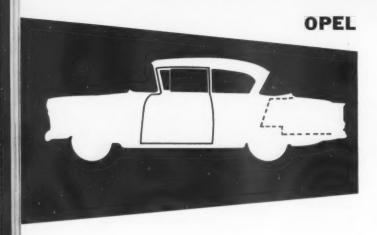
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Although small even by economy car standards, the Morris is nevertheless quite roomy inside, Individual front seats give comfortable support and leg room is ample. The rear seat offers a minimum of comfort but can be used for short trips. The dashboard, though short on instruments, has all kinds of cargo space. Two glove boxes plus a parcel shelf will accommodate all the odds and ends that seem to accumulate over a period of time. The trunk is divided into two sections, the lower one housing the spare wheel. This allows tire changes to be made without disturbing the luggage, and keeps the luggage compartment clean.

Two models are available; a sedan and a convertible. The roof of the convertible folds down neatly and is protected by a cover. Unfortunately, from a styling point of view, the window frames remain fixed and detract from a fully open

Both cars are powered by the BMC "A" block engine, di-placing 948 cc and rated at 37 bhp. The superb road-ability of the Morris is due in large part to its excellent suspension, composed of torsion bars in front and semi-elliptic leaf springs in the rear.





The Opel Rekord is a two-door sedan with a distinctive American flavor, featuring wraparound windshield and sturdy bumpers, but with a restrained use of chrome trim. The interior is roomy, visibility is excellent, and the "Big Car" feel is very apparent; which should appeal to consumers who want a car that is smaller than the average American sedan, but not too much smaller.

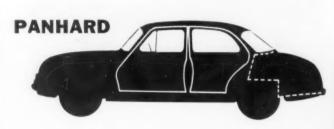
Designed to accommodate four people comfortably, the Rekord will hold five or even six depending upon the amount of crowding one is willing to endure. Front and rear seats are of bench type, with split backs on the front that fold forward to allow access to the rear seat. Sun visors, vent windows, automatic dome light and heater contribute to the feeling of luxury within the car. Exterior styling is such that the automobile appears to be quite large when viewed by itself, but when placed among domestic cars in traffic, its small size becomes apparent.

The engine is a four-cylinder unit that develops 56 bhp. The transmission is a standard three-speed synchromesh gearbox, and should pose no problem to the domestic buyer.

Front suspension is by coil springs and wishbones, while the rear uses leaf springs. Telescopic shocks are used all around

Powered by a two-cylinder air-cooled engine of 850 cc capacity the Panhard Dyna is a full five seater, with squeeze room for six. The engine is of the horizontally opposed type — which means that the cylinders are placed on their sides opposite each other in relation to the crankshaft. The entire unit is placed ahead of the front wheels, which are driven through a four-speed gearbox that is situated aft of the engine.

The external appearance of the Panhard is such that first-time viewers are immediately separated into pro-Panhard or anti-Panhard people. It has the sort of styling that is either liked or disliked — there is no possibility of it growing on you. Aside from styling the Panhard has many attractive features. Four wide doors provide easy access to the spacious interior. Luggage capacity is more than ample for any length trip. Once used to the "feel" and sound of the two-cylinder engine the owner can put in many peppy care-free miles. So, aside from the looks of the car, it is an attractive machine that is, if nothing else, distinctive.



## PEUGEOT



One of the most attractive imported cars on the American road is the French sedan with the strange name. The Pooj-oh is a four door sedan that is larger than most other imports, and blends in well with domestic traffic. The Peugeot stands out in a crowd only because it is more compact and less osternatious than the domestic product.

With room for five people and luggage space to match, the car is nevertheless small enough to drive with precision and park with ease. Its styling is neat and perfectly proportioned, and interior trim has a luxury car look. Nor is this look deceiving as, from the completely leak-free sun roof to the firm bump-levelling suspension, this is a quality car. Another interesting point is the fact that there is only one optional extra available; a roof luggage rack that fits into existing brackets. Included in the base price are a sliding sun roof, four-speed all synchronized gearbox with overdrive in top gear, Michelin X or whitewall tires, heater and defroster, and the aforementioned brackets for the luggage rack.

The interior features individual front seats with fully reclining backs; perfect for non-stop driving where one drives while the other sleeps. Rear seat passengers will find ample head and leg room and, if only two are aboard, the center armrest may be folded down. The sun roof is easily operated, and when closed forms a perfect seal against rain and cold.

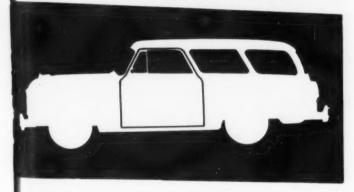
Not too well known in this country, the Riley One-Point-Five sedan is being imported in increasing numbers and should appeal to a certain faction of economy car buyers. It is none too American in design—being a bit high and "lumpy" looking, but is nicely appointed and substantially built.

Power is supplied by a four-cylinder in-line that develops 68 bhp at 5400 rpm. The displacement is 1489 cc, almost a liter and a half, which gives reason for the suffix one-point-five. The four speed gearbox is actuated by a floor mounted shift. Suspension is by wishbones and torsion bars in front and by semi-elliptic springs on the solid rear axle. Shock absorbers are Armstrong double-acting hydraulic on all wheels.

The interior of the Riley is luxurious by economy car standards and features a walnut dashboard with tachometer, speedometer, fuel, oil pressure, and water temperature gauges. Upholstery materials are leather and "leathercloth", with pile carpets on the floors. There is ample room for four people, although leg room in the back can become cramped when the front seats are moved all the way to the rear. The individual bucket seats in front give good support both to the legs and laterally.

The spare tire is stowed in a compartment under the trunk which is uncovered when the trunk lid is opened. The trunk itself it not huge, but is ample for a couple of suitcases. The back of the rear seat can be folded for access to the trunk, or when long parcels are to be carried.

### RAMBLER AMERICAN



The Saab is an attractive two-door sedan, powered by a three-cylinder two-cycle water cooled engine of 748 cc displacement. Driving through a three-speed gearbox to the front wheels, the engine will pull the Saab to a top speed of a shade over 70 mph. Much of this speed is due to the excellent aerodynamic qualities of the body, which in addition offers the advantage of producing almost no wind noise at speed. The unit construction steel body is completely rattle free and is so air tight that a window must be opened slightly in order to allow the heater to properly circulate warm air.

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Interior appointments have been improved over earlier models and now include larger and deeper front seats with adjustable backs, windshield washers, clock, side view mirror, loam rubber seat padding, shock absorbing sun visors, and locking glove box. A kit is available to allow the front eats to be lowered completely to form beds, while the rear at may be adjusted to three different heights for maximum comfort and rear passenger visibility.

Luggage space in the trunk is ample for normal trips, but if long objects must be carried, the rear seat back folds cown to allow unobstructed space from the front seat to the tunk door. The back seat may be removed entirely if the cir is to be used mainly for utility.



Maybe everyone doesn't want a small little sedan, but it's certain that a lot of people want a car that is smaller than the average Detroit creation. American Motors sensed this trend early enough to be the only manufacturer in this country to sell its products successfully in 1958. Although part of their sales figure includes the foreign-built Metropolitan, the backbone of the market consists of Rambler Americans, built right here in the U. S. of A. By popular demand a station wagon has been added this year to complement the sedan.

The five passenger two-door sedan is available in nine solid colors and eight two-tone combinations. The 100-inch wheelbase body features unit-frame construction, reclining seats, and nylon or vinyl upholstery.

A standard three-speed manual transmission is supplied, with overdrive optional at extra cost. In addition, an automatic transmission is available which should appeal to the owner who does most of his driving in city traffic.

Coil springs provide independent suspension in front, while semi-elliptics take care of the rear. Hydraulically operated brakes of nine-inch diameter supply adequate stopping power.

The station wagon has the same specifications as the sedan. It is a two-door model, with a door at the rear. Both machines provide numerous consumer benefits including overall handling ease, operating economy, ease of parking and maneuverability.





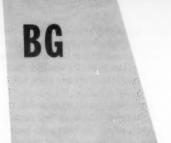
### SIMCA

The most popular Simca model in this country is the attractive Aronde De Luxe, a four-door sedan with sports car-like performance and handling. A top speed of more than 80 mph is possible from the 1290 cc engine while a mileage figure of 40 mpg can be obtained under average conditions. The engine develops 48 bhp at 4500 rpm.

For a car of this size the suspension is massive and contributes greatly to the Simca's roadability. The rear semielliptic springs are 42 inches long in the main leaf, have eight leaves each, plus two overload leaves. This, plus the use of tubular shock absorbers, provides a ride that is soft, but doesn't pitch or roll, and irons out bad road irregularities with stern authority. Front suspension incorporates coil springs and a heavy anti-sway bar.

The steering is light and positive, requiring three turns from lock to lock; full lock producing a turning circle of only 31 feet. Brakes are ample by family-conveyance standards and are well matched to the car's performance.

The finish and interior details are nicely executed in a combination of plastic materials and fabric. Controls are simple and handy, and visibility is excellent.

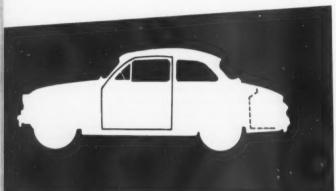






The Skoda is quite new in this country, but there is a distributor-dealer organization and parts and service should soon be readily available. These little Czechoslavakian cars are notable for a backbone type chassis, and have independent suspension on all four wheels. Transverse leaf springs are used; in front with upper wishbones, while at the back with swing axles.

The engine of the Skoda 440 is a 1089 cc four-cylinder overhead valve unit developing 42.5 bhp. The 440 is a four passenger sedan, the design of which has been well proven and has not changed in many years. In addition to the sedan there is also a more sporting convertible model with an engine horsepower boost to 52 bhp, and an advertised top speed of about 85 mph.



The Studebaker Lark is available in four body styles: with V-8 or flat-head six power, and manual or automatic transmission. The four-door sedan may be had with either engine, the two-door hardtop with V-8 only, the two-door sedan with flat-head six only. Transmission choice and overdrive are optional on all models. The wheelbase of the sedans is 108.5-inches and overall length is 14-feet, 7 inches. The station wagon is 91/2-inches longer in length and 41/2-inches longer in wheelbase.

The flat-head six engine displaces 169.6 cu in, and develops 90 bhp at 4000 rpm. If you don't mind a small decrease in economy, the V-8 engine will give a lot more punch from its 180 bhp. Even then it is possible to travel up to 19 miles per gallon of gas if stick shift with overdrive is used.

Interior appointments are quite plush for a car of this price range. The dash is padded on top and bottom, and features a center located glove box of ample capacity. The instruments are located directly in front of the driver in a recessed area to eliminate reflections on the windshield, and the speedometer is round. Seats are bench-type and have the optional luxury of reclining to form beds. Six passengers can easily form the opinion that the Lark is bigger on the inside than it is on the outside.

## STUDEBAKER LARK



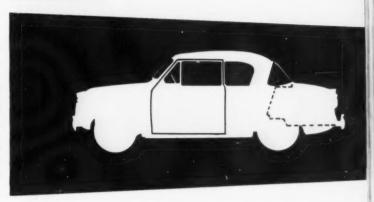
The Rapier is a compact attractive 1½-liter car with a sporting performance that has enabled it to compete quite successfully in international rallies. During the past few years it has shown a tendency toward American styling, which in the latest model manifests itself in flashing two-tone color combinations, hooded headlights, and tail fins.

Front suspension is by unequal wishbones, coil springs, and an anti-sway bar, while the rear is taken care of by semielliptic leaf springs on a solid axle. Shock absorbers are

telescopic on all four wheels.

Comfortable seating for four is fully possible in the Rapier. The two front seats fold forward well out of the way to allow easy access to the rear. Leg room in the front is more adequate while knee room in the back is enough even when the front seats are all the way back. Driving position is good and the pedals are large and well spaced. Tachometer and speedometer are directly in front of the wheel, while the other four instruments are laid out in a row in the middle of the dash. The whole interior of the car is done in a washable bright-colored imitation leather which gives off a warm light-hearted atmosphere well in keeping with the Rapier's personality.

### SUNBEAM



### **TAUNUS**



From its hooded headlights to the tips of its large round tail-lights, the Taunus is all Ford. The German version apes the product of the parent company so successfully that you have to stand right next to a 17M to get a true picture of its size. With a 102-inch wheelbase the Taunus is a good bit smaller than the domestic Ford, and consequently it is a much more handy vehicle in traffic. Mechanically the Taunus is closer to the English built Fords, in having a front suspension made up of two large coil springs and telescopic shock absorbers combined in one unit.

The 17M is one of the few economy cars that offers four transmission options. It can be had with a standard three-speed all synchromesh gearbox, a four-speed all synchromesh unit, or either of these with overdrive, plus an automatic two-pedal arrangement. This last is known as Saxomat, and it does away entirely with the necessity of having to use a clutch pedal. In use the driver selects gears merely by moving the shift lever—declutching is done automatically.

A neat trick is the split seat backs up front that are individually adjustable to allow the proper angle for both driver and passenger. Door handles inside are cleverly incorporated in the arm rests, which prevents accidental opening. All controls are picture-coded for ease of identification.

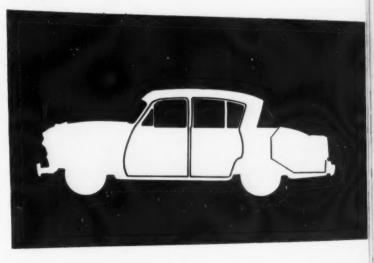
## TOYOPET

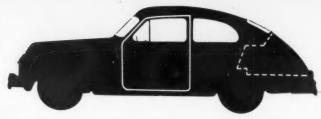
The larger of the two Japanese cars on these shores is the Toyopet. It is a four-door sedan of more modern design than the Datsun, both in exterior styling and engineering. At the same time, it is quite ordinary in that it offers no mysteries of operation to anyone familiar with column-shift American cars.

The engine is an in-line four displacing 1453 cc and developing 60 bhp at 4000 rpm. The basic mechanical design of Japanese cars is English, so anyone who is familiar with British cars should have no problems with this car.

Body stylng is conservative and functional, and will not seem out of place on the American road. The rear doors open forward, and a novel safety feature is the dashboard wirning light that goes on when any one of the doors is unlatched. The trunk is ample and contains both a spare wheel and a good selection of tools in a metal box.

The suspension of the Toyopet is softer than that of the Utsun, and when corners are taken there is a considerable a nount of roll. Coil springs and wishbones are used in front, while the rear has the conventional solid axle and seni-elliptic springs.





A five passenger sedan could hardly be considered a sports car without the risk of offending the die hard faction of sporty car admirers who insist that a *true* sports car must have no more than two seats, be real low and slinky, and above all be foreign. The Volvo meets the last requirement, and a lot of others having to do with power, handling and a few other things that some "real" sports cars do not, but it can hardly be called low and slinky . . . and it will hold a whole family.

Power is supplied at the rate of 88 bhp at 5500 rpm by a sturdy overhead valve four cylinder engine displacing 1584 cc. Behind it is an excellent four speed all synchro gearbox that is not only a pleasure to operate, but allows the full potential of the engine to be delivered to the rear wheels.

A top speed of a bit more than 90 mph and a 0-60 time in the vicinity of thirteen seconds, is indicative of the performance available.

Inside, the Volvo is equally impressive. Individual buckettype seats in front are cantilever mounted to allow free foot space to rear seat passengers. Due to the rather high roof line, head room is more than adequate for all passengers and in addition allows for a truly cavernous trunk. Driving position is excellent, with all instruments easy to read, and the long floor-mounted shift lever is positive enough to make a remote linkage superfluous. Steering is light and quick, and combined with a capable suspension allows the Volvo to be thrashed around in a real fun-type manner. Seats are tastefully upholstered in two-tone combinations that complement the exterior colors.

# SPECIFICATION CHART

Make and Model	Body Types and Pass, Capacity Available	Cylinders and Arrangement	Valve Arrangement	Bore and ! Inches N	Stroke Millimeters	Piston plo Cubic Inches Cen	Cubic	sion	Maximum Power bhp @ rpm	Maximum Torque lb-ft. @ rpm		verall Ge 3	ar Ratio
AUSTIN A 40	*Sed., 2-dr., 4-pass.	41.L.	ohv	2.48x3.00	63x76.2	57.8	948	8.3:1	38@5000	50@2000	4.7	6.6	11.1
BORGWARD													
Isabella Isabella TS	Sed., 2-dr., 5-pass. Sed., 2-dr., 5-pass.	4 1.L. 4 1.L.	ohv ohv	2.95x3.33 2.95x3.33	75x84.5 75x84.5	91.10 91.10	1493 1493	7.0:1 8.2:1	60@4700 75@5200	79.5@NA 83.8@NA	3.90 3.90	5.30 5.30	8.39 8.39
CITROEN ID19	Sed. 4-dr., 6-pass.	4 I.Ļ.	ehv	3.07x3.94	78x100	116.50	1911	7.5:1	66@4400	97.6@2500	3.31	4.77	7.34
DATSUN 1000	Sed., 4-dr., 4-pass.	4 l.L.	ohv	2.87x2.32	73x59	60.2	988	7.5:1	37@NA	49.2@NA	5.1	7.6	12.3
DKW													
Three-Six Auto Union 1000	Sed., 4-dr., 4/5-pass. Sed., 2-dr., 4/5-pass.	3 I.L. 3 I.L.	2-stroke 2-stroke	2.79x2.99 2.89x2.99	71x76 74x76	54.63 59.74	896 980	7.0:1 8.0:1	45@4250 56@4500	56@2750 67@3500	4.3	6.3 6.3	10.5 10.5
ENGLISH FORD													
Anglia Prefect Consul Zephyr Zodiac	Sed. 2-dr., 4-pass. Sed. 4-dr., 4-pass. Sed. 4-dr., 4-pass. Sed. 4-dr., 5-pass. Sed. 4-dr., 5-pass.	4 1.L. 4 1.L. 4 1.L. 6 1.L. 6 1.L.	side side ohv ohv	2.50x3.64 2.50x3.64 3.25x3.13 3.25x3.13 3.25x3.13	63.5x92.5 63.5x92.5 82.6x79.5 82.6x79.5 82.6x79.5	71.55 71.55 103.90 155.80 155.80	1172 1172 1703 2553 2553	7.0:1 7.0:1 7.8:1 7.8:1 7.8:1	36@4500 36@4500 59@4200 90@4400 90@4400	52@2500 52@2500 92@2300 137@2000 137@2000		4.4 4.4 4.1 3.9 3.9	8.9 8.9 6.7 6.4 6.4
FIAT													
1100 1200	Sed. 4-dr., 4-pass. Sed. 4-dr., 4-pass.	4 I.L. 4 I.L.	ohv	2.98x2.95 2.83x2.95	68x75 72x75	66.50 74.50	1089 1221	7.0:1 8.0:1	40@4400 55@5300	52@2700 60@3000	4.3	6.9 6.75	10.2 10.23
GOLIATH 1100	Sed., 2-dr., 4-pass.	4 H.O.	altv	2.92x2.52	74x64	67.2	1101	7.4:1	40@4250	59@2750	4.1	6.6	10.8
Minx Series III	Sed. 4-dr. 4-pass.,	4 l.L.	ohv	3.11x3.00	79x76.2	91.20	1494	8.5:1	52.5@4400	78@2100	4.55	6.79	11 26
Husky	Conv., Stn. wgn. Stn. wgn. 2-dr., 4-pass	s. 4 I.L.	ohv	3.00x3.00	76.2x76.2	85.00	1390	8.0:1	47.5@4400	72@2200	4.8	7.1	11 8
LANCIA Appia													
Apple	Sed., 4-dr., 4-pass.	V 4	ohv	2.68x2.96	68x75	66.5	1089	7.2:1	43.5@4800	56@3000	4.2	6.4	10.1

In an attempt to get a share of the small car sales, Detroit has begun to import the products of their European subsidiaries and market them through their own domestic dealerships. As a result, you can now browse around in a Pontiac showroom and find, next to its American built cousins, an English built Vauxhall.

There are no mysteries involved in the operation of the Vauxhall; anyone who has driven a column shift American car can hop right in and drive it away. In fact, the interior of the car, except for size, has a domestic look right down to an including metallic-threaded upholstery and a chromed heater-ashtray console. Passenger comfort has been neatly attended to, and head room is more than ample, even at the sides of the rear seat. Vision is excellent except at the edges of the wraparound windshield where the wiper blades don't quite wipe. The design of the body is rather square and offers the advantages of a huge trunk, that has a low sill and a key latch. Four doors allow ease of entry and exit to all passengers, and is a welcome sight on a small sedan. Styling is tasteful, and the domestic influence could well be an advantage; especially in view of the fact that many people would like a small car except for its looks. Then too, the Vauxhall carries massive bumpers, good protection against its ill-bred relatives on this side of the ocean.

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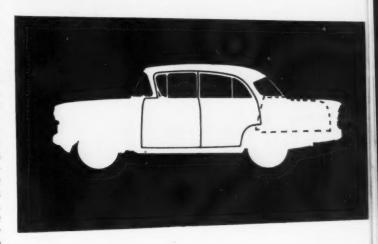
6.4

10.23

10.3

11 26

## VAUXHALL



1	Overdrive Available	Final Drive Ratio	No. and make of Carbs.		Widest Tread (Inches)	Overall Length (Inches)	Overall Width (Inches)		Ground Clearance (Inches)	Circle	Weight (Dry)	Tire Size	C	sel Tank apacity S. Gals.) (	Suspens Front	ion Reur		Cheapest Madel Price at P. O. E.
16.9	No	4.66	1 2	83.5	47.5	144.2	59.5	56.7	6.2	35	1600	5.20x13	12	7.3	1. C.	S. E.	H. Dr.	1795
14.05 14.05	No No	3.90 3.90	1 SO 1 SO	101.625 101.625		161.5 161.5	66 66	58.3 58.3	6.9	36 36	2205 2205	5.90x13 5.90x13	6	10.6 10.6	I. C. I. C.	1. C. 1. C.	H. Dr. H. Dr.	2495 2845
13.8	No	3.88	1 50	123	59	189	70.5	57.9	6.0	38	2640	165x400	12	14	1. H.P.	. I. H.P	H. Disc fro	
20.3	No	5.13	1 111	87.4	46.5	153	58	59	6.4	NA	1971	5.00x15	12	8.6	S. E.	S. E.	H. Dr.	1616
18.0 18.0	No No	4.7 (FWD) 4.7 (FWD)	1 SO 1 SO	92 92	53 53	166 167	66 66	58 58	8.0	36 36	1917 1980	5.60x15 5.60x15	6	10 10	1. Tr. 1. Tr.		H. Dr. H. Dr.	1 <b>995</b> 2395
17.2 17.2 11.7 11.1 11.1	No No No No	4.43 4.43 4.11 3.9 3.9	1 SO 1 SO 1 Z 1 Z 3 Z	87 87 105 107	48 48 53 53 53	150 152 172 179 181	61 61 69 69	59 59 62 62 62	7 7 6.5 7 7	35 35 35 36 36	1684 1736 2463 2650 2697	5.20x13 5.20x13 5.90x13 6.40x13 6.40x13	12 12 12 12 12	7 7 10.5 10.5 10.5	1. C. 1. C. 1. C. 1. C. 1. C.	S. E. S. E. S. E. S. E.	H. Dr. H. Dr. H. Br. H. Dr. H. Dr.	1464 1517 2034 2215 2387
16.6 16.5	No 9 No	4.30 4.30	1 WE		48 48	149 154	58 57	59 58	6	34 36	1932 2023	5.20x14 5.20x14	12 12	8.5 8.5	1. C. 1. C.	S. E. S. E.	L. Dr.	1743 1998
18.9	No	4.71	1 50	89.3	50.9	160	64.2	57.1	7.1	36	1800	5.60x13	6	12	1. \$.	E. S. E.	H. Dr.	1949
14.12	No	4.55	1 7	96	49	162	60.7	5 59.5	7	36	2191	5.60x15	12	8.7	1. (.	S. E.	L. Dr.	1699
17.0	No	4.78	1 2	84	49	146	62	61	6.5	31	1951	5.00x15	12	6.25	1. (.	S. E.	L. Dr.	1639
17.2	No	4.22	1 50	99	42.7	156	56	55.4	6.3	32	1800	5.60x15	12	118	1. (.	S. E	. H. Dr.	. 296

Make and Model	Body Types and Pass. Capacity Available	Cytinders and Arrangement	Valve Arrangement	Bare and Inches A	Stroke Hillimeters	Piston plac	ubic	sion	Maximum Power bhp @ rpm	Maximum Torque Ib-ft. @ rpm	0v	erall Gea	r Rutio 2
METROPOLITAN													
1500 MG	Cpe., Conv., 2-pass.	4 I.L.	ohv	2.88x3.50	73x88.9	90.90	1489	7.2:1	52@4500	74@2100	-	4.2	6.3
	Sed., 4-dr., 4/5-Pass.	* 41.L.	ohv	2.88x3.50	73x88.9	90.9	1489	8.3:1	66.5@5200	85@3300	4.3	5.9	9.5
MORRIS 1000	Sed. 2-dr., 4-pass., Sed. 4-dr., 4-pass. Conv., Sin. wgn. 2-dr., 4-pass.	41.1.	ohv	2.48x3.00	63x76	58.00	948	8.3:1	37@4800	50@2500	4.6	6.4	10.8
OPEL Rekord	Sed. 2-dr., 4-pass.	4 l.l.	ohv	3.15x2.91	80x73.9	90.80	1488	7.5:1	55@4200	78.8@2000	-	3.9	6.55
PANHARD Dyno 58	Sed. 4-dr., 4-pass.	2 H.O.	ehv	3.55x2.97	85x75	52.00	850	7.2:1	42@5000	51@2250	(4.7)	6.1	9.3
PEUGEOT													
RAMBLER	Sed., 4-dr., 4-pass.	4 1.L.	ahv	3.15x2.87	80x73	87.50	1468	7.0:1	58@4900	74.5@2500	(4.3)	5.7	9.7
	Sed. 2-dr., 4-pass. 11 models	6 I.L.	side ohv	3.125x4.25 3.125x4.25	79.7x108 79.7x108	195.60 195.60	3205 3205	8.0:1 8.7:1	90@3800 127@4200	150@1600 180@1600	-	3.3	5.4 6.2
Rebel V8	(all 4-dr., 5-pass.) 11 models	V8	ohv	3.50x3.25	88.9x82.6	250.00	4097	8.7:1	215@4900	260@2500	~	4.1	6.9
RENAULT	(all 4-dr., 5-pass.												
4CV Dauphine	Sed. 4-dr., 4-pass. Sed. 4-dr., 4-pass.	4 1.L. 4 1.L.	ohv	2.15x3.16 2.28x3.15	54.5x80 58x80	45.63 51.50	747 845	7.25:1 7.25:1	21@4200 32@4250	33.25@2000 48.35@2000	-	5.0 4.7	8.5 7.9
RILEY													
One-Point-Five	Sed., 4-dr., 4-pass.	4 I.L.	ohv	2.875x3.50	73x88.9	90.9	1489	8.3:1	68@5400	NA	3.7	5.1	8.3
938 SIMCA	Sed. 2-dr., 4-pass.	3 1.L.	2-stroke	2.59x2.87	66x72.9	45.60	748	7.3:1	38@5000	52@ <b>20</b> 00	-	5.23	8.53
Aronde Deluxe, Elysée, Grand Large	Sed. 4-dr., 4-pass.	4 I.L.	ohv	2.91x2.95	74x75	78.70	1290	6.8:1	48@4800	65@2800	4.4	6.5	10.4
Aronde Montlhéry, Grand Large Special, Rue de Paix, Oceane, Plein Ceil	hardtop 2-dr. 4-pass.	4 I.L.	ohv	2.91x2.95	74x75	78.70	1290	7.8:1	57@5200	67@3100	4.4	6.5	10.4
Vedette SKODA	Sed. 4-dr., 4-pass.	V8	side	2.60x3.37	66x85.7	143.46	2351	7.2:1	85@4400	110(-92400	-	4.0	7.4
5-440	Sed., 2-dr., 4-pass.	4 1.L.	ohv	2.68x2.96	68x75	66.5	1089	7.0:1	42.5@4200	52@3200	4.8	7.6	11.8
SUNBEAM Rapier	Sed. 2-dr., 4-pass.	41.1	ehv	3.11x3.00	79x76.2	91.20	1494	8.5:1	73@5200	81.2@3000	4.8	7.1	11.8
STUDEBAKER													
Lark VIII	Sed., Cpe., 2-dr., 4-d Stn. Wgn., 4-pass	ir.} 61.L.	side ohv -	3.00x4.00 3.56x3.25	76.2x101.6 90.3x82.4	169.6 259.2	2780 4250	8.3:1	90@4000 180@4500	145@2000 260@2800		3.5	5.8 5.4
TAUNUS													
17M	Sed. Z-dr., 4-pess. 4-dr. 4-pess., conv.	4 1.1	ohv	3.31x3.02	84x76.6	103.60	1698	7.1:1	67@4400	97@2200	-	4.4	7.5
TOYOPET De Luxe	Sed., 4-dr., 4-pass.	41.1	. ohv	3.03x3.07	77x78	88.6	1453	8.0:1	60@4400	79.5@260	0 –	5.3	8.6
TRIUMPH										на	4.6	6.6	11.2
VAUXHALL	Sed. 4-dr., 4-pass.	41.1		2.48x2.99		57.80	958	8.0:1	40@5000				
Volkswagen	Sed. 4-dr., 4-pass.	41.1	. ohv	3.13x3.00	79.4x76.2	92.00	1507	6.8:1	54.8@4200	84.5@2400	~	4.1	6.7
Sedan, Sunroof, Conv. Karmann-Ghia	2-dr., 4-pass. Cpo., 2-pass.	4 H. 4 H.		3.03x2.52 3.03x2.52		72.74 72.74	1192 1192					5.4 5.4	8.3 8.3
VOLVO PV544		41.1			79.4×80								

1	Overdrive Available		No. and make of Carbs. (	base	Tread L	ength	lverall Width Inches}		Ground Clearance (Inches)	Circle	Weight (Dry)	Tire Size		l Tank pacity . Gals.) F	Suspensie ront R	eur	Brakes	Cheapest Madel Price at P. O. E.
12.0	Ne	4.22	1 2	85	46	150	62	56	6	37	1875	5.20x13	12	8.75	1. C.	S. E.	H. Dr.	1626
15.6	No	4.30	2 SU	-99.3	49.9	178	63.5	59.8	6.2	37.5	2450	5,90x14	12	12	1, (.	S. E.	G. Dr.	2740
16.5	No	4.56	1 SU	86	51	148	61	60	6	33	1662	5.00x14	12	6.5	I. Tor.	S. E.	L. Dr.	1495
12.6	No No	3.9	1 Ope	el 100	50	174	64	59	7	35	1995	5.60x13	6	9.25	Ł.C.	S. E.	H. Dr.	1958
16.5	yes Yes	6.15(FWD)	1 \$0	101	51	180	66	57	6.5	32	1875	145x400	12	8.75	I. Tr.	Tor.	H. Dr.	1995
18.6	6 No	5.75	1 \$0	105	53	176	66	58	7	31	2352	165x380	12	10.5	f. Tr.	C.	H. Dr.	2175
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NOTES: Cylinder arrangements: 1.k.—in line, V—Vee, H.O.,—Horizontally opposed.

Valve arrangements: 1.k.—in line, V—Vee, H.O.,—Horizontally opposed.

Valve arrangements: ohv—overhead valve, ohc—overhead camshaft, dohc—double overhead camshaft,
Carburetors: SO—Solex, Z—Zenith, SU—S.U., WE—Weber,
Suspension: 1.—Independent, C.—Coit, S.E.—Semi-elliptic, H.P.—Hydro-pneumatic,
Brakes: H.—Hydraulic, G.—Girling, I.—Lockheed, Dr.—Drum, Dsk.—Disk.

NA-Information not available



HEN GREAT JOURNEYS of history are discussed, such names as Columbus spring to mind, along with Magellan, Captain Cook and Admiral Peary. Often the vehicles of exploration become as famous as their masters—witness the Santa Maria, the Spirit of St. Louis, the

Well, as of now you can add to the illustrious list the name of Hennesey, together with his vehicle, the Morris Minor 1000!

I have just completed 12,085 miles of not-altogether-trouble-free driving around North America. Object of this six-week trek: to prove that an automobile weighing less than a ton is capable of transporting half its weight anywhere in the world—and do it a lot faster than the average yak caravan. Furthermore, Hambro Automotive Corporation of New York, importer of all British Motors Corporation cars and sponsor of the venture, wanted to show the diehard doubting Thomases of America that small imported cars are not toys but genuine automobiles which can be driven anywhere by the average motorist. For this purpose they chose the least mechanical minded motorist in the entire world.

Me.

My specific instructions, intoned by young Tony Birt of Hambro — who thinks up these schemes as part of his public relations job — were these: "Keep the accelerator on the floor at all times except when passing schools and churches. Give the car all the mistreatment you both can stand — try to wreck her without actually colliding with anything substantial. We want this to be the most gruelling ride since Ben Hur!"

I doubt that either the Morris or I lived up to these tongue-in-cheek expectations, exactly; on the other hand, I have heard of less exciting trips. (For example, there was that Air Force chap who accidentally hooked his chute in the tail of a C-47 and was dragged 100 miles.)

Anchorage, Alaska, was my farthest point of penetration and base of operations in the 49th State. Around this unbelievable frontier town composed largly of neon signs, alcohol and good spirits, I drove my earthbound satellite into virtual orbit, leaving the road at will to go scampering up to a glacier terminus — and sometimes finding the glaciers smoother than the Alaska roads. Never were so few horse-power called upon to do so much as I reined all 35 of them up to an ice-locked stream to fish for my dinner; or galloped across a frozen Nevada desert while some crack shot crankpot pelted my flanks with 30 calibre slugs; or skidded 50 yards down a Saskatchewan highway and longed for a mountain to stop me; and, finally, on the last day of the trip, to run into weather on the New York Thruway that made Alaska seem like Eden Roc with parkas.

Naturally, what with my being a professional sportsman, the entire venture was heavily flavored by hunting and fishing and the possibility of enjoying them while driving a small car halfway around the world. That is, if, after returning to

A small wagon proves ample for a rugged run to the 49th State.

By Hal Hennesey



Neither sleet, nor snow would stay the sturdy Alaskan sports car drivers (left) from turning out to greet the travel-stained Minor.

New York, I did not trade in my rods and guns for a set of golf clubs, the trip would be considered a success...

Well, I still have all my rods and guns. But I'm not so sure I have all my faculties. Here's why:

The troubles were mostly human rather than automotive. They started when I was forced to make a last minute substitution for my photographer, due to domestic problems. His, not mine. The substitute's name was not Janson Fuller but we will call him that. Among his attributes Janson numbered a camera, a strobe attachment and a driver's license. I saw all three with my own eyes.

Thus it was that on October 20, Anno Domini 1958, we three – Janson Fuller, I and the Morris – sped westward across the George Washington Bridge. It was the desire of our sponsor that we drive the 4500-odd miles to Anchorage without stopping, thereby making the outbound journey one of endurance as well as economy. When reminded that he had neglected to install relief tubes in the vehicle, Tony Birt relented. "You may," he conceded, "pause briefly for these annoying if necessary little functions. Now if we could only arrange for some kind of inflight refueling system —"

He finally decided we would also have to stop for gas, now and then.

I drove for the first ten hours. Halfway to Chicago I turned the wheel over to Janson and moved into the passenger seat. My co-driver promptly swerved the car into the lane of oncoming traffic. A natural error, I assumed; it would take him a few minutes to become accustomed to the Morris and its sports car wheel ratio.

It took four days for me to realize that Janson simply would not do. He still could not keep the car in the right lane, nor could he stop it without stalling. A few close shaves convinced me that it would be suicidal to allow him to drive up the Alaska Highway under winter conditions—or any other conditions. And, just like that, Hambro's endurance run from New York to Alaska was knocked into the realm of Might Have Been. And if I were unable to get a photographer between Winnipég and Alaska, the whole venture

might go by the board.

Meanwhile, destiny in another shape was getting into the act. In Chicago the car was serviced by Jack Nakagawa's

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act. In Chicago the car was serviced by Jack Nakagawa's enthusiastic crew at S. H. Arnolt's. A routine check convinced the boys that a leaner needle in my carburetor would enable me to better weather the vicissitudes of cold climate and high altitude, by leaning out the fuel mixture. As I said before, I know a lot less about an internal combustion engine than I know about the internal organs of a komodo lizard. If the authorized representatives of Hambro Automotive said I should have a racing needle, that's what I'd have!

It was installed and, as I sped northward toward Canada. I imagined that the Morris performed better than before. During this period, of course, I was more concerned with the disaster involving the relief driver-who-could-not-drive.

With all the gear on board (below) the little Minor's weight was almost doubled. Suspension took beating without murmur.







"Welcome to Canada." Customs official gives little rig his O.K. on crossing border before the tough leg up the Alcan Highway.

Sleeping bag, ax, stove and rifle (right) are necessary in kit for any "out of this world" touring.



Who said the "West" is no longer wild. BMC dealer points at bullet dent in wagon's door panel. Shootem-up took place in Nevada during return trip.

(Continued on page 74)

author Henessey looks out over the ozen expanse of Summit Lake. Landmark—at 4250 feet—is highest point on the Alaskan Highway.



MILE 392.5
SUMMIT LAKE
HIGHEST POINT
ON THE HIGHWAY
ELEV. 4250







### First big economy contest for light cars yields some flattering figures on the gas mileage available with an import.

HE QUESTION, "Why do people drive those little foreign cars?" was answered in part by the results of a recent Mobil Mileage Rally that was run in Southern California. This was America's first big-time, USACcontrolled fuel economy competition and it was held under conditions that any urban family might encounter during normal Sunday-driving conditions. All figures corresponded reasonably with SCI road test experience and average fuel consumption for the 35 contending lightweights was 33.48

A book could be written based on the significance of this figure. We'll confine ourselves here to just one of its implications. The current national average fuel consumption of American cars is 14.5 mpg. If it could be raised by just one mpg, one billion, 800 million gallons of gasoline would be conserved each year. If you multiply that figure by the 19gallon difference between Detroit-car and foreign-car fuel consumption, you come up with a possible annual saving of 34 billion, 200 million gallons of combustible. In terms of dollars and cents the figures are just as astronomical. Assuming a national average gasoline cost of 30 cents per gallon, American motorists could save nine billion, 260 million dollars per year by switching to light cars.

What this might mean in terms of our climbing cost of living and shrinking natural resources we'll leave to the appropriate experts. One thing we can be emphatic about is our admiration for a company like Mobil, which, in effect, encourages its customers to buy less of its product by sponsoring economy competitions everywhere. In the U.S. it's General Petroleum, Mobil's western U.S. subsidiary, that stages the big-car Economy Run and the small-car Mileage Rally.

There were sharp contrasts between the Run and the Rally. For the Run, USAC officials select new cars at random from dealers' showrooms, seal their engines, then permit their drivers to break them in, more or less uniformly. The Rally was open to all comers. Many of the entries were privately owned and many had tight new engines. For the nationally-publicised Run, crews practice for weeks, sometimes for months. This first Rally was a casual affair. At least one of the entrants never did understand that it wasn't a race. Storming along flat-out, she flipped her car, picked herself up, and said disconsolately, "Wouldn't you know it? Just when I was leading the race, too!"

The Run and the Rally did, however, have one important feature in common: the USAC insisted on stock specifications. Each entry for the Rally was impounded and checked out with care. Every carb was taken apart, every transmission and rear axle examined. Plenty of deviations from stock specs were found and the cars' owners were told to come up with the standard parts or go home. The cars that started were representative production machines, whether or not they were broken in.

The Run's ton-miles-per-gallon criterion was not a factor in the Rally. For this esoteric figure to have been incorporated into the Rally's procedure, many complications would have to have been accepted. For a first experiment, which the Rally was, the effort was not justified, and miles-pergallon was used as a satisfactory substitute.

The conditions for the Rally were both tougher and easier than those for the Run, and this makes any meaningful comparison-aside from sheer miles per gallon-hard to find. The Run is fast and long. The Rally was relatively short, and over roads that were sometimes tight and tortuous. In both cases the contestants have to maintain brisk average speeds and make up in the open what they lose in traffic or tough terrain.

The course for the Rally covered 258 logged miles. Odometers were not used for measuring distance traveled versus gallons consumed. The massed starters took off at five A.M. from downtown Los Angeles, moved through light town traffic, down the Freeway, and on to San Bernardino. From there they climbed straight up to the Rim Of The World Highway near Lake Arrowhead, at over 5000 ft. above sea level. Then through the mountains, up and down, eventually onto the San Fernando Valley, through the spectacular gorge that cuts through the mountains that separate the Valley from the Pacific, over to Malibu Beach, down the coast to Santa Monica and inland to the finish point at Los Angeles' Ambassador Hotel.

Citroen 2 CV driver had to bolt his right foot to the firewall to insure that his tiny-engined mount met rally time schedule.

Rally cars were halted by forest fire. This gaggle of imports was delayed over two hours while fire fighters used highway.





The Rally was laid out with the aim of sparing the contestants involvement in the peak hours of Sunday-motorist traffic. All went well until the cavalcade reached the vicinity of Arrowhead and found itself in the heart of a major forest fire. Four machines got through before fire engines clogged the road and the police closed it. Movement came to a standstill.

For two hours the entrants parked in the middle of the raging conflagration, blinded by smoke and bombed with water from fire-fighting aircraft. Eventually they were led slowly out of the area by a police convoy. USAC counted the unscheduled delay as time out, of course, but the long convoy period raised hell with the average speed of 35.6 mph that had to be maintained by all cars if they were going to finish in the allotted time. And the two-hour delay served to put nearly all the contestants into peak Sunday traffic, which had been carefully avoided in the original plan.

Under the rigorous conditions of extremes of altitude and of traffic the fuel consumption figures recorded were, in most cases, remarkably good. Best of all was the 50.54 mpg skilfully squeezed from a Fiat 750 by John Rich of Italiano Motors, Burbank. Rich obviously knew what was happening in his combustion chambers on every stroke. The worst figure in the contest was scored by Walter Fife's Rolls Royce: 14.20 mpg. Fife, in the Rally just for the ride, didn't even turn off his air conditioning to conserve power and fuel. For many miles through the mountains, Rich reported, he followed the Rolls, fascinated by the sight of the big car's neartotal lack of body lean in the tightest hairpins. Average fuel consumption for Class D (Over 1500 cc) was 27.9905 mpg. With the Rolls eliminated from the calculations the average becomes 29.7133, just a shade under that of Class C (1100 to 1499 cc).

In fact, the performance of the top two Class D cars is amazing, when compared with all the mileage figures in smaller-engined Class C. It took outstanding driving skill for Lee Hamer to get 36.06 from his Volvo over this course and for Mary Davis to get 35.34 from her Porsche. Bill Corey's performance in the big Jaguar was little short of heroic. Jim Parkinson startled everyone by topping even the thrifty VW with his smooth control of his Alfa Giulietta Sprint coupe. Skill makes the vital difference.

winners, left to right: Bill Likes, Dauphine; Lee Hammer, Volvo: John Rich, Fiat 750; Jim Parkinson, Alfa



But, skill notwithstanding, the total results of the Mileage Rally present a very useful index of the relative economy performance of all the cars competing-an index based on strictly stock machines operating not under ideal road conditions but under conditions that are typical of or worse than everyday city and highway driving.

The results indicate that the small-displacement rig can show excellent fuel economy over a rigorous course-right down to some critical point in displacement. Below that point, reduction in engine size entails a loss in fuel economy. The engnes seem to be too small to do the job; they have to be run with wider throttle openings and lower manifold vacuum, and so on. This was nicely illustrated within the Fiat range. The 750 was spectacularly more economical than the 1100 with 50.54 mpg over 37.40. But the Fiat 600 was not more economical than the 750. Instead it consumed almost as much as the 1100. And the Fiat 500? Well, it ran

The results are filled with illustrations of this point of diminishing returns. Compare, for example, the 845 cc Renault Dauphine's 43.35 mpg with all but the first two finishers in Class A, including the 392 cc Gogomobil.

In addition to providing some thought-provoking results, the Mobil Mileage Rally was a lot of fun for the participants. It was rigidly legitimate, which gave all the contestants a healthy feeling of equality, and at the same time it was conducted in an easy-going, sporting way. We saw none of the grim inter-entry tensions that inevitably spring up in the intensely serious big-car Economy Run. There were, for example, no howls of protest when Mary Faulkner (Walt's widow) ran out of gas 50 feet from the finish and the little redhead jumped out and pushed her Anglia across the finish line. Fortunately for her, USAC already had given her credit for an extra 2.5 miles when she was turned back by police in the fire area.

The first Mobil Mileage Rally was entirely experimental. It's too soon to tell whether the results will justify holding it annually, but it's our guess that dealers, distributors, and the foreign-car buying public will find it valuable enough to clamor for a repeat next year.

(Continued on page 81)

Big Citroen ID19, driven by Bill Jones, turned in a surprising 29.39 mpg. Car is powered by big, 1911cc, four-cylinder engine.



HROUGHOUT the motor-racing world the wandering Seeker-After-Truth finds that impecunious enthusiasts of all lands have devised distinctive formulas for single-seater or sports/racing competition that allow them to taste the joys of real racing without paying the usual price. In every case such groups have voluntarily restricted the scope of their racing machinery in the interests of close competition at the lowest price consistent with fun and safety. Important as they are for the personal satisfaction of drivers and builders, such second-echelon contests also filter, select and train the Grand Prix and Championship drivers of the future-and nurture some expert designers and mechanics in the process.

Feeling that organized road racing competition on this level is indispensable to any nation that would take an honorable place in the Grand Prix world, SCI has always encouraged and publicized such developments. If you're of a mind to know where all these English cars, drivers and teams recently materialized from, there's your answer. Since the war racing on the local club level has flourished in England,

thanks in large part to the utility of the formulas propounded there. One of the first to mature after VE day was eventually to become international Formula III, and was first devised by some of the boys at Bristol Aircraft who had caught racing fever. Their 500 cc. cycle-powered projectiles began John Cooper on his car-building career, and John in turn sold Stirling Moss his first mount. For an atypical example of Formula III equipment see SCI for October, 1957.

Classed generally as sports cars by virtue of vestigial fenders and passenger space, 1172 and 750 formula cars are the backbone of British club racing. The engine and drive line, accounting for most of the cost of a race car, are limited to Ford 100E bits in 1172 cars, and to units from the doughty Austin Seven for the 750 formula. Starting after the war with a trials car, Colin Chapman switched to 750 racing, and finally began his Lotus business with chassis for 1172 cars.

Lastly, England deserves full credit for the conception of the current 1½-liter Formula II, a useful class which has produced both drivers and cars for the Grand Prix Formula I. Your February and June, 1957 SCI's cover Formula II engines and cars completely.

A group of irrepressible Canadians took a cue from the 1172 concept, broadening and adapting it to their needs. Setting a limit on basic cost and on engine sizes to allow both rocker-boxes and flatheads to compete, they chose a sports car configuration to allow use of the cars on the road. They called it "Canada Class"; it's covered in the June, 1957 SCI.

Free Formula racing is one way to promote interesting and enjoyable meets. since everything from production sports cars to obsolete Grand Prix cars are eligible. Nowhere is this practiced so successfully as in Australia, where many intriguing specials have shown their heels to the V16 BRM and 250 Maseratis. Similar freefor-alls are features of the Mexican and Argentine racing scenes. Here at home enthusiasts have been known to nurse a pet single-seater the year 'round just to have one chance to let it out in the Seneca Cup race at the Glen, or in an occasional hillclimb. This apart, we have no organized non-sports-car native road racing for-

# FORMULA FOR FUN

Formula Junior can provide the framework for an American "learner's" class.

by Karl Ludvigsen



mula in America.

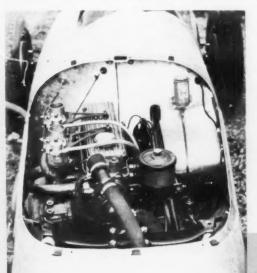
Appalled by the dearth of top-level drivers in his native Italy, that experienced competitor Count Giovanni Lurani has promulgated and promoted a new national racing class there, known as the Junior Formula. Strongly supported also by Fangio and his one-time manager Giambertone, Lurani's category was restricted to machinery of basic Italian origin. Now engine and drive line must be from cars approved under FIA Appendix J. presumably under the Grand Touring category which requires a production of 100 units within twelve months. Single and twin overhead cams are tabu, only flatheads and rocker-boxes being allowed.

Engine sizes from 750 cc to 1300 cc are permissible, there being a sliding-scale minimum weight limit to keep power/weight ratios roughly equal up and down the line. A sample value is a minimum of 880 pounds for a displacement of 1100 cc, the size which has naturally become most popular during the first months of the formula. The 1100 or "Millecento" Fiat is as available as can be and with its four pushrod cylinders fits in perfectly, having

the additional advantage of a wide range of available speed equipment (SCI, March, 1957). A small machine using an Abarthenlarged 600 Fiat engine and gearbox would also seem to be a possibility.

One of the first to vault aboard the bandwagon was Vittorio Stanguellini, who in so doing supplied Lurani with some valuable material evidence as to the kind of equipment his formula might breed. Born on March 24th, 1910, the slight, diffident Stanguellini has been preparing cars for competition since 1933, and achieved notable success up to 1940 with a series of modified Balilla and Topolino Fiats. In '46 he returned to the fray with his first tubular chassis, and the next year supplied it with a twin-cam 1100 cc engine. In 1950 this was joined by the now-famous Stanguellini DOHC 750, which is used in bothsports and racing cars and which shows little trace of its Fiat ancestry. His genius at managing these metamorphoses, while running a major Fiat servicing point and building hydraulic dynamometers and truck bodies as well as a broad range of speed equipment, has earned Vittorio the sobriquet Mago di Modena-Magician of Modena. He's ably assisted in these undertakings by his right-hand man, Sig. Bedoni

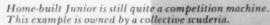
Stanguellini's Junior Formula prototype. vintage late 1957, was naught more nor less than one of his very successful 750 Formula single-seaters, powered by a modified Fiat 1100 engine. Still using the twoport head, this first car drew fuel from two downdraft Webers, a later development stage being two cycle-type Dell'Ortos. As the Formula regulations firmed up in early 1958, the prototype's Topolinotype front suspension was replaced by Fiat 1100 assemblies, the tread being widened in the process. Under the sponsorship of Bardahl and the piloting of Roberto Lippi, this particular car went on to win four Junior Formula events and the Italian Championship in 1958. From it has been developed the "production" Stanguellini Junior, the best-looking Stanguellini yet and surely one of the handsomest small racing cars ever hammered together. It's a meaningful recommendation for the Mago di Modena, the newest international formula, and the versatility of Fiat components.



Prototype engine (left) used two downdraft Webers, and special valve rocker cover. Taruffi starts JR race field of two Stanguellinis and a Volpini at Vallelunga Autodrome.



Cockpit of latest Stanguellini JR has a production air about it with neat shaft cover and instrument panel.







FORMULA JUNIOR STANGUELLINI SPECIFICATIONS	
POWER UNIT:	Wheelbase
Type Four cylinder, water cooled,	Rear Tread
Valve Operation	Front Suspension Wide-spaced parallel wishbones with sea-legged
in-line	coil springs, anti-roll bar
Bore & Stroke	Rear Suspension Rigid axle located by parallel trailing arms and trans-
Displacement 66.5 cu, in. (1089cc)	verse cables; coil springs
Carburetion By Two Weber 40DCO twin- throat sidedraft	Shock Absorbers Telescopic
Max. Power	Brakes Fiat 1100/1200, conventional mechanisms
Compression Ratio9/1	Tire Sizes Front 5.20 x 12,
DRIVE TRAIN:	Rear 5.20 x 14 Weight
Transmission Fiat 1100, with special ratios	(in accordance with the
and central shift lever	regulations)
Axle torque taken by Parallel trailing arms	Fuel Capacity
CHASSIS:	RATING FACTORS:
Frame Tubular ladder-type, with	Specific Power Output1.07 bhp/cu, in.
stiffening tubes integral with body	Power/Weight Ratio12.6 lbs/bhp Maximum Speed110 to 125 mph
with body.	A LAND TO THE REAL PROPERTY OF THE PARTY OF
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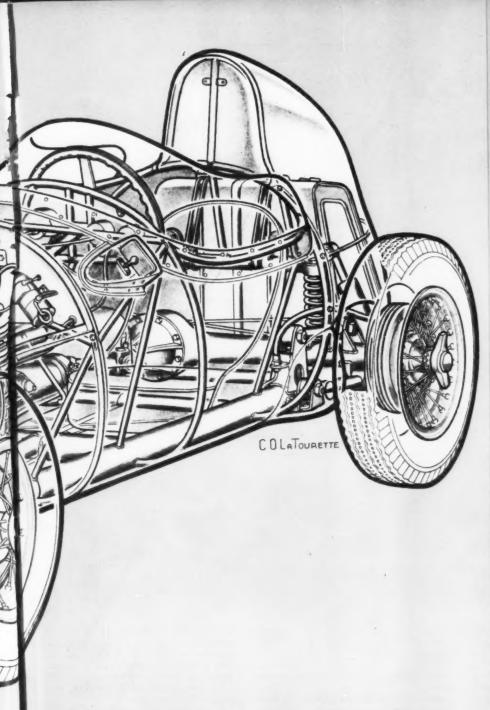
Actually, with the exception of the 1089-cc cylinder block, most of the proprietary parts used are from the newer 1200 Fiat. This is true of the rugged stamped and welded parallel-wishbone front suspension, with its conventional pivots and short king-pin. Wound to an unusually "coarse" pitch, the front coil springs are canted steeply inwards-like the Alfa Guilietta's-to give a mild variablerate effect. Unlike some of the early cars, the production models have no anti-roll bar. Forward-facing steering arms are linked by an asymmetrical two-piece track rod, actuated by a steering box offset to the left. Only one fiber joint, next to the box, breaks the long steering column.

The use of this production front end is a hangover from the Italian National Junior Formula of 1958, which requires a front suspension from the same car that supplied the engine. This clause was dropped from the international edition, leaving suspension design wide open. Stanguellini chose to retain the live axle system that had proved effective on his 750-cc Monoposto and some sports cars. A very short pair of parallel trailing arms at each side accepts working torques and guides the axle's movement in conjunction with vertical coil springs and slightly angled tubular shocks. Lateral location is very unusual, the axle shock pivots on each side being anchored to the frame on the opposite side by lengths of wire cable. Geometric conflicts take place if both hubs are deflected deeply simultaneously, but with the stiff suspension used this isn't a

problem. The roll center would appear to be below the level of the cables, or about half way between the hubs and the ground.

Following a formula familiar to other Italian special builders, this Junior International entry is fitted with Fiat 1100 conventional-type brakes. Using Fiat's own Al-Fin drums, without vents, they're 250mm - or about 97/8-inches - in diameter. The circumferentially-finned drums are closely shrouded in front by the twelveinch Borrani wire wheel rims, there being a radial space of an inch more at the rear.

In a forthrightly practical manner these movable components are united by a single ladder-type tubular frame. The main side members are 80 mm in diameter. They're tied together by two tubes at the rear, two at the center (aided by a stressed floor



pan) and two at the front, welded into a rigid supporting bridge for the IFS. Stanguellini takes no structural liberties with the side members, which run dead straight until they're bent inward at a point adjacent to the engine mounts and foot pedals. Two diagonal bracing tubes abut against the main central crossmember, while a simple four-legged bridge at the back accepts forces from the coils and shocks, and supports, by means of two straps, the trapzoidal fuel tank. Some supplemental tiffening is provided by the small-tube uperstructure welded on by the body

Disposition of the driver is always a notty problem in a small racing car, paricularly one that uses many standard omponents. The usual solution has been

that adopted for the single-seater Cisitalia cars, in which the driver sat high over the central drive line, with the gear lever angling up between his thighs-none very happy consequences. Without the complication of offset gear cases as favored by Volpini among others of his competition, Vittorio has come up with a low seating position and a convenient right-hand shifting prong. Angled across the frame, the engine/gearbox assembly with its long tailshaft extension places the drive shaft well over to the right of the chauffeur's posterior. At a slightly lesser angle the twouniversal shaft continues back to the specially-made offset-center rear axle.

As already mentioned, the pushrod OHV 1100 Fiat engine first used in this Junior Formula car was fitted with two types of

#### FORMULA JR. REGULATIONS

#### Article 1-Definition

"Formula Junior" cars shall be single-seaters of which the principal elements come from cars homologated by the F.I.A. for the International Touring Cars category (minimum 1,000 produced in 12 consecutive months). The principal characteristics are the following:

#### Article 2-Dimensions

- (a) Minimum wheelbase 200 cm. (6 ft. 71/2
- ins.).
  (b) Minimum track 110 cm. (3 ft. 7% ins.).
  (c) Maximum body width 95 cm. (3 ft.

#### **Capacity and Weight**

- (a) Maximum capacity 1,100 c.c. Minimum weight 400 kg. (880 lb.).
  (b) Maximum capacity 1,000 c.c. Minimum weight 360 kg. (792 lb.).

#### Article 3-Mechanical Parts

(a) The cylinder block, including the head, and the cylinders themselves, if these are detachable, shall come from the engine of a car homologated in the Touring category of the

F.I.A.

The engine of the "Junior" should thus have the head, the cylinder block, and the crank case (exclusive of the sump) belonging to the same homologated power unit. No exception is permitted to this fundamental order.

(b) The gearbox should be that of a touring car homologated by the F.I.A. Absolute freedom is allowed in the number of speeds and choice of ratios.

ratios.
(c) The system and the principle of the brakes

(c) The system and the principle of the branes should be those of the car from which the engine has been taken.

(d) The system and principle of supplying the fuel/air mixture (carburetors, injectors, etc.) should be as on the car from which the principle is taken.

etc.) should be as on the car from which the engine is taken.

(e) The cubic capacity may be altered, within the maximum permitted by these regulations, either by increasing or reducing the bore. Any alteration of the stroke is forbidden.

(f) The car should be fitted with an automatic starting device.

#### Article 4—Coachwork

The body must be an open single-seater, fitted with a roll bar to protect the driver in case of turning over. It must also be fitted with a fire-proof bulkhead, as specified in the International Sporting Code (Article 125).

#### Article 5-Weight

The minimum weights defined by Article 1 are those of the car in racing trim, fitted with all the accessories prescribed by the regulations, and with the fuel tank dry, but with water and

#### Article 6-Silencers

Race organizers may demand the fitting of an effective silencer. This rule is left open so that it may be applied in those areas where the ears of public opinion are too sensitive!

#### **Article 7—Forbidden Practices**

(a) The use of engines with one or more overhead camshafts.

In this way the Formula respects the object specified by the F.I.A. which relates to the economy of the "Junior". As the enormous majority of small and medium capacity cars, of a utility character, and from which the "Junior" should be adapted, have not got overhead camshafts, the category is limited to the type of engine in common use.

common use.

(b) The use of limited slip differentials.

(c) The modification of the number of the crankshaft main bearings.

(d) The modification of the position of the camshaft.

These leat three rules are also inspired by

camsnatt.

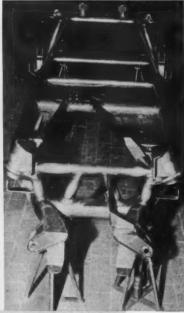
These last three rules are also inspired by the desire to prevent solutions that are costly or not available to the young amateur constructor.

#### Article 8-Fuel

Only commercial fuel may be employed as defined by the C.S.F.I.A.
This rule is identical to the Ialian one and obviously sensible.
Each "Junior" which runs in a race shall be furnished with a certificate from the national sporting authority which guarantees the origin of the basic elements.

JR Formula racing promotes individuality in design. One-off (below) puts pilot on one side of drive shaftgas tank on other. Body is similar to Indy roadster.





Frame (left) is simple ladder-type tube structure. Angled braces in engine bay show location of off- set drive train. Shock absorber mounts at rear are built up from main tubes. Heavier stock is used for front suspension attachment points. First car (below) is still the most successful one. Here it is being driven by a determined Roberto Lippi.



single-throat carbs, since the 1100 has a two-port head. With the arrival of a fourport head for the 1200, however, it became possible to outfit this humble engine with racing-type twin-throat Weber carburetors of 40-mm diameter, and arrange a properly ram-tuned intake system. The ram tubes draw air from a deep hood scoop, vented at the rear to prevent a pressure buildup that could throw carburetion off. Fuel is supplied by the Fiat mechanical pump. Exhaust piping from the three ports is straightforward, ending just before the right rear wheel in a mild megaphone that enhances the spectator appeal of Junior machinery.

Since the rules specify that a self-starter must be fitted, Stanguellini retains the Fiat unit and carries a lightweight Fiomm battery at the driver's right. This allows retention of the standard Marelli distributor to fire plugs by the same maker. The distributor is, however, mounted on an extension which houses a skew gear drive to the Smiths 8000 rpm tach. Naturally the power-producing elements get the full Stanguellini treatment, including a special 52 cam and heavier valve springs-"opportunamente elaborato", as the catalogue says. Peak horses (CUNA system) are quoted as 70 in 1958 and a handsome 77 for 1959. Power peaks at 6500, with from 6800 to 7000 being available before the pushrods start pushing back. The little four-banger seems surprisingly strong from 4000 to 6000, and propels this racing car up to about 80 in a manner reminiscent of a Porsche Carrera. Thereafter it tapers off only slightly to a maximum of about

Such power is protected by a new radiator with an adjustable blind, special water manifolding, and, on the latest cars, a header tank mounted on the cowl. Also utilized is Stanguellini's "production" oversized and finned oil pan casting. The driver is kept informed on water temperature and oil pressure.

Happily for builders of specials, Fiat makes liberal use of aluminum, which in this case houses everything from the clutch to the gearbox tailshaft. Like the brakes, the single-disc clutch is lined by Fren-Do. Inside a 1200 casing, with its purposeful waffled cheeks, are a special set of highratio cogs-actually just a new clutch shaft and countershaft to change the ratio of the input gear set, as available in two combinations for any 1100 or 1200. Vittorio went to the competition to get a suitable rearward extension for the box control, this being supplied by Nardi of Turin, who specializes in such baubles.

A very long output shaft extension is terminated by an external-contracting band brake, applied by a handy lever at the right of the seat. Several axle ratios may be had, the lowest being a 4.78 which is recommended for hillclimbs or short courses. A 4.2 is standard, with two higher cogs being catalogued for flat-out affairs.

Sleek and long-snouted, this Stanguellini's body was especially designed to provide maximum accessibility by means of the customary Dzus fasteners twisted into a small-tube superstructure. The cockpit is beautifully finished and has a most professional atmosphere, with its hammertone dash finish, wood-rimmed wheel and enveloping windshield. Perhaps inspired by these surroundings, Stanguellini owners have put the marque well in the lead in Junior Formula proceedings to date. Up to the end of 1958 the Modenese works had



Other constructors are building cars to the new formula.
Volpini JR (left) features fourwheel independent suspension.
Front end is Fiat 1200 with anti-sway bar added.
Giaur JR (below) takes the "light is right" route. Front-end suspension is by transverse leaf spring ala elderly Fiat 500s.



Vittorio Stanguellini (in fedora) talks to Fangio after his trial of prototype Formula JR car. Ex-World Champion is very interested in new class.



turned out 15 examples, but the backlog has mounted since the formula was internationally sanctioned. Backed by orders from Austria, Venezuela and Argentina, among other countries, Stanguellini hopes to build 30 cars this year. Price at the factory is about \$3500, with a discount if you order in quantity!

The fun of this formula is and should be doing it yourself, however, and of twenty cars on the line for the curtainraiser at the Monza 500 only two were factory-fabricated. Fiat bits and pieces were the rule in the rest, but arranged in many ways. Some were true central-seaters while others opted for an offset, sports-car-like layout. Many were professionally worked out in detail, much drilling being in evidence. The freedom of Lurani's formula was clearly introduced to combat the monotony that befell Cisitalia's postwar cheme of building 50 identical Fiat-based ars and letting the drivers fight it out, in he manner of class sailboat racing. No nonotony, and in fact much technical novlty, is to be seen in the Junior Formula ars built so far.

Some five events were scheduled for the

new category during the last half of the Italian season, one being held at the Modena airport circuit in place of the usual Formula I Grand Prix. On that occasion a purse of around \$5000 was on the block, a part of which would go a long way toward that Stanguellini. Portugal has also adopted the Juniors, stipulating that basic components must be from European, rather than Italian, production cars. Other national clubs are reportedly interested, so the Italians may well reach their goal of devising "una vera, esteticamente a tecnicamente, piccola 'Gran Premio'".

For us here the point is not, as is so often made, that such racing is just what we need in the States — though it would be a lot of fun. Much more pertinent is the idea that we very much need some kind of native road-racing formula, preferably for full-bore single-seaters, to pave the way personally, mechanically and economically for a return of genuine Grand Prix racing. There must be a working "farm system" to develop the drivers, designers, cars, builders, courses and promoters needed to support real road racing. We need the equivalent, in short, of the sprint car

loops that so ably back up our native Championship track race series.

A formula to fill this need could be created from scratch or aligned with a plan like the Junior Formula, the emphasis being that native production engines and, possibly, drive lines and suspension must be the basis thereof. Rules must be phrased to bar reworked Indy roadster chassis and the like; after all, we'll be needing them for the Grand Prix proper! If any displacement limit is needed it might be set at 274 inches, though again the sliding scale of minimum weight might be the best approach. I'm making no attempt to outline a definite plan. Much better qualified to do so would be USAC's new Road Racing Division. My hope is only that, in their commendable rush to establish Grand Prix racing over here, our contest boards and promoters don't fail to take a longrange look at the single-seater scene. The solution, an active native formula, is either being furiously sought or actively practiced in the North, South, East and West outside our borders, that is.

# Souping

The



by Roger Huntington

HEN YOU put a Judson supercharger on a Renault or an Okrasa kit on a Volkswagen you're trying to do what two generations of auto engineers have failed to do—build economy, utility, compactness, and performance into one package! Whether you succeed or not depends on what you expect, or are willing to overlook, in those terms "utility, economy, and performance."

Probably most small car owners have thought at one time or another of doing a little "hopping up." There's all kinds of speed equipment on the market for all of the more popular models; prices are fairly reasonable; installation and tuning are not beyond the facilities of the average foreign car garage ... there's nothing to it, really. At the same time the problem of performance—acceleration for road maneuvering—is a very real one to most small car owners, and it gets more so as the general level of U.S. passenger car performance rises. So the editors of sports cars illustrated thought it might be high time we faced up to some of the brutal basics of this general problem of hopping up the small foreign car:

#### THE BASIC PROBLEM

"I can cruise as fast as the law allows with my new VW; but my overall average speed on the highway is down 4 or 5 mph from what it was with my Chevvy—and I have to take a lot more chances to do that." A friend of mine who recently traded in a 220-hp American sedan on a Volkswagen had these comments on the comparative road performance. I'm sure you've heard the same thing, or experienced it, yourself. This is your basic performance problem with a small car in a nutshell.

Ever since the Detroit manufacturers have been going at it in their own private horsepower race, opponents of the trend have been saying that 100 or 125 horsepower is "all the power you need for normal driving." This is silly. When you're behind a car doing 35 mph on a crowded, hilly road, and you want to cruise at 50 or 60, you're going to need all the power you can get to pass him safely. Or if you're boxed in on a crowded freeway and you want to pull off at the next turnout, you can use an extra 50 or 100 hp to jockey over there. People who say 100 hp is enough have been driving 200+ hp cars for the last five years, and forget what it's like to maneuver with a slow-accelerating car. Admittedly if time means very little to you-and you can afford to stay behind that 35-mph car for 20 miles-then you may have no pressing need for better performance. If you do most of your driving in town at speeds below 35 mph, without a lot of freeway driving, you can get by with relatively poor acceleration. But if it is important to you to maintain decent point-to-point average speeds, either on the highway or city freeway, then the performance of your car is a life-and-death problem.

Unfortunately the small foreign car has two strikes on it to start. We all know that acceleration is largely a function of the effective weight/HP ratio. A 2000-lb. car with 80 hp should perform about the same as a 4000-lb. car with 160 hp, as they both carry 25 lbs. per pony. Why, then, must light economy cars be deficient on this factor? Because they're designed to use a minimum amount of fuel. The engineers could probably put a 75-hp engine in the 1400-lb. Renault Dauphine without greatly increasing the cost in the showroom...but the gas mileage would be chopped almost in half. Don't forget that these cars were designed primarily for the European market, where gas cost is out of sight. No compromises are possible on this score. The fact that many present and potential U.S. buyers would be willing to sacrifice 30 percent of their mpg to get a 30 percent drop in the 0-60 mph time is beside the point.

And another problem: As car weight goes down variations in load cause a larger *percentage* change in the effective weight power ratio. Consider the effect of taking on three passengers totalling 450 lbs. If your normal gross weight is 3800 lbs, this will raise the weight/power ratio by 12 percent... but if you only gross 1800 lbs to start the extra 450 lbs, will boost the ratio by a whopping 25 percent! Hop-up work can get discouraging under these conditions. You get the car feeling pretty good when you're in it alone; but then you take on a load of friends to demonstrate, and she dies like a dog. This can be embarrassing as well as dangerous, if you happen to be demonstrating the acceleration on the wrong side of the white line. Keep it in mind.

#### WHAT CAN WE DO ABOUT IT?

Before we get into specific hop-up procedures it might be a good idea to face some of the brutal facts about what we can and can't do with these tricks on a small foreign

I think I can say this without hesitation: Heavy hop-up work on your smaller European cars—in the class of the VW, Renault, Fiat 600 and 1100, Morris Minor, etc.—cannot give more than acceptable highway performance under modern traffic conditions. I consider "acceptable" performance as being about equivalent to our American 6-cylinder sedans of the last few years. This implies a true weight/power ratio in the rough neighborhood of 35 lbs./hp, 0-60 mph acceleration between 16 and 21 seconds, and top speed of 85 mph or more.

This can readily be done with available speed equipment, at costs in the range of \$150 to \$600 (not including installation labor). If this is enough performance to satisfy you, and you don't *expect* more for your investment, you can be a happy hopper. If you expect to spend \$100 on your VW and have it go like a Corvette, you might as well forget the whole deal.

On the other hand, if you have one of the more powerful European small cars-in the class of the Ford Zephyr, Simca, Peugeot 403, Vauxhall, Volvo, etc.-you can hope to match American V-8 performance. This would mean weight/power ratios below 25 lbs./hp, 0-60 times below 13 seconds, and top speeds over 100. This again means a horsepower boost of at least 40 percent-and, again, this can be achieved with available equipment on the more popular models. The big bug, of course, is that this speed equipment costs quite a bit more than equipment for the smaller, more popular cars. If all you're after is brute performance it might be cheaper to trade for a secondhand American V-8 power pack-and maybe hop that up. Think of all the angles. And, incidentally, speaking of costs, how about fuel economy with a hopped engine? Actually the fuel consumption of any engine depends basically on the horsepower produced. A hopped engine won't use any more gas than stock if you never use any of the extra HP. The way you use the throttle is the whole story. Human nature being what it is, though, better figure on 10 to 20 percent in overall gas mileage after any appreciable hopping!

#### THE PATHS TO POWER

The next question is how do we go about getting our extra horsepower? You all know there are many, many possible ways to increase the performance of an internal combustion engine—all the way from increasing the bearing and piston clearances to adding oxygen-bearing nitrates to the fuel. Fortunately perhaps, only a few basic paths are really practical and well-defined for the amateur hopup man, and we can concentrate on these, I like to classify them into five basic paths to power: (1) increasing piston displacement: (2) improving the intake and exhaust breathing through more carburction, cleaner ports and valves, larger valves, exhaust headers, dual exhaust lines, etc.; (3) supercharging: (4) modifying the camshaft timing

# HOT FOO CONSU

Raymond Mays alloy head conversion elevates 104-inch English Ford sedan to century class,

EVELOPERS and vendors of engine conversions for production cars naturally spend much of their time looking sideways at the performance figures for the corresponding standard machinery. But when Rubery Owen and Co. Ltd. went to work on a transformation package for the Ford Consul they found they needed to look sideways in two directions at once - clipped, so to speak, in a cleft yardstick. The reason was this:-

The Consul, with four cylinders and 103.9 cu ins displacement, is the minor member of the senior branch of the British Ford family. The two majors, Zephyr and Zodiac, are equal with six cylinders and 155.8 cubic inches. All three, on the other hand, share a common body shell and therefore have the same passenger space and trunk capacity. So Rubery Owen's problem was how to muscle up the Consul to a point where it not only would beat a stock Consul insensible but also leave the Zephyr/Zodiac brethren panting. Failing this, the deal held little attraction for a potential Z-man, who could reasonably argue that six cylinder performance, other things being equal, was pleasanter than four cylinder performance.

Well, having recently tested an Owenised Consul on its home ground we can report that this Raymond Mays conversion, as it's called, surely disimpaled Messrs. R. O. from the horns of their dilemma. With a best one-way speed of exactly 100 mph and an average maximum of 95.8, the thing outgalloped the normal Consul by 20 per hour and beat the Zephyr that SCI roadtested in November of '57 by 16 mph. (Nothing affecting performance has been changed on the Zephyr and Zodiac since that date.) Then, taking zero to 70 as a sample criterion, the comparative acceleration figures are convincing too:-Mays Consul, 20.6 secs.; standard Consul, 38.2 secs.; standard Zep, 24.6 secs.

Automotive writers, on returning test cars to their makers or makers-over and reciting the performance figures they have gotten, are used to seeing surprise registered; but mostly it's a pained surprise. For a change, Raymond Mays's face lifted instead of plummeting. Nobody at Rubery Owen, or in the associated firm of Raymond Mays and Partners Ltd., had, we gathered, ever recorded a three-figure maximum against stopwatches for this tuned Ford four. Indeed, R.O.'s own brochure on the conversion - a type of literature that doesn't often err on the modest side - claimed only 90 mph.

Reluctantly, though, we can't ascribe these best-ever results to personal sorcery. The converted car, before it came our way, had undergone a series of roadtests at British contemporaries' hands, so the breaking in process could hardly have been more thorough. There's nothing like a set of well loosened up vitals to bring out the best in a small quantity-produced engine. In the debit column, of course, ample and quickly acquired internal clearances can be a source of extra mechanical noise, but this car didn't seem any chattier

than standard. A misdemeanor it did commit, albeit the only one, was covertly blowing out a cylinder head core plug, allowing most of the cooling water to escape into the sump. The inundation was discovered, quite by chance, right after we had done a series of timed standing quarter-miles, and it's interesting to speculate how much longer the Consul would have borne its worse-than-death ordeal without retaliating. Cause of the blowout was immediately traced to an obsolete method of securing the plug, which isn't used on heads currently sold,

Centerpiece of the conversion is a cylinder head developed directly from the one Rubery Owen have been marketing for the Mk. 11 Zephyr and Zodiac sixes since the early part of 1957. (A report on a Ford with this equipment, Gale Force for the Zephyr, appeared in the August, 1957 issue of SCI.) Just how direct the development was can be gathered from the fact that the prototype Consul head was made up by sawing the two rearmost combustion chambers off a Mays Zephyr head and welding a plate over the end. This time- and money-saving dodge was made possible by the interchangeability of the maximum number of parts in these Dagenham built fours and sixes - the bore measurements, for instance, are of course

Evolved, along with the rest of the conversion, by Peter Berthon, chief designer and development engineer at BRM, the Raymond Mays head for the Consul is cast in DTD424 light alloy and raises the compression ratio from 7.8 to 9/1. Valves are oversize and made from special material - EN51 3-percent nickel steel for the inlets and EN59 chrome nickel silicon steel for the exhausts. Respective head diameters are 1.66 and 1.29 ins, a substantial step up from the standard sizes of 1.437 and 1.188 ins. All valves have chromium plated stems and stellited tips, the guide material being aluminum bronze on the intake side and cast iron for the exhausts. There is one spring per valve, Ford fashion, but the strength is increased.

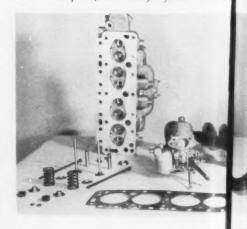
Port areas and shapes are pure Berthon, and where the regular Consul has its inlet passages siamesed, both rows are separate in this version. On the prototype engine the intake tracts entered the head at 45 deg. but a recent modification, incorporated in the one we tried, has changed the angle to 35 deg. from the vertical; accompanying this revision, the inlet manifold and carb assembly has been moved in closer to the head, giving the whole thing a tidier and more compact appearance.

In normal Dagenham practise the pushrod-operated valves are parallel but inclined 14 deg. off vertical; they stay parallel in the Raymond Mays interpretation but the angle is reduced to 4 deg.

Rather suprisingly - for this was dictated by performance considerations, rather than cost - only one carburetor is used. Before finally settling for a single semi-downdraft SU, type H6 (13/4 in bore), they had tried and discarded four Hot Consul stands outside Rubery, Owen works purveyors of "tuned" engines.



R O souping kit makes do with one large SU and super finish alloy cylinder head



alternatives: first a pair of 34/W1A Zeniths on a straight tube manifold directly connecting all ports, as with the Mays Zephyr kit; then two dual-choke Webers attached flat on the port faces; then one H6 SU mounted vertically; next. two full downdraft H6s.

(Continued on page, 84)

# Something happens to BMC's ovable runt when you hang on an extra SU

# MINOR WITH A MAJOR'S STRIDE



Minors good road adhesion is more than able to cope with increased urge. Here car goes through bend on the limit. There is very little roll even with the increased speed.

A FTER TEST reporting a standard Minor 1000 in the August 1957 issue, an SCI staffman had a think-balloon sticking out of his head. What, he day-dreamed, would be the effect of adding an extra carburetor and a tuned exhaust. Many American owners of these lovable little runts from Cowley will no doubt have speculated in the same vein. And now, on the strength of recent mileage on a modified Minor in its native environment, we have the answer. In fact, the answer outscopes the question, because modifications to the car under review didn't stop at just an extra carb and a tuned exhaust.

The conversion we are presently concerned with is the product of one of the best known and most reputable English soupkitchens, namely, Alexander Engineering Co. Ltd., of Haddenham, Buckinghamshire. Presided over by a perennial placeman in Britain's national hillclimb championship, Michael Christie, Alexander Engineering devise and market booster sets for a wide range of cooking type engines, British and otherwise-Ford, Rootes Group, BMC, Standard, Vauxhall Victor in the pending basket, etcetera. From personal experience of several of these we can affirm that, while consistently successful in getting a quart of performance out of a pint pot, Alexander are careful not to strain the strength factor of the pot itself.

Their suite for the modern Minor splits three ways, like this:-(1.) Basic engine conversion, which we will dissect hereafter; (2.) Replacement exhaust manifold giving a derestricted flow; (3.) Kit of parts to raise the axle ratio from 4.55 to 4.2/1. You can have any one of these, standing in its own grounds (not that the second would be worth much, solo), or any two in combination, or the lot. Haddenham missionaries are, at this writing, sounding out potential U.S. dealers, and it's likely that by the time this report appears, ads in the American technical press will identify U.S. supply sources for Mr. Christie's forcemeat. If so, dollar prices will of course be indicated too. If not, Minor mahouts in the U.S. will be able to purchase conversions direct from Alexander, to whom enquiries regarding prices should be addressed.

The current sterling price list isn't readily translatable into dollars and cents because packing and freight costs haven't yet been determined, and U.S. buyers naturally won't be able to take advantage of the plan whereby domestic consumers turn in their original cylinder heads, exhaust manifolds and axle parts against Alexander's replacements.

The cost of the special exhaust manifold being almost negligible as a proportion of the main engine deal, it can for practical purposes be lumped together with item (1.). The car we tested in any case was fitted with this manifold, and it's safe to assume that anybody springing the price of the major operation would go for the lesser one too.

The total engine treatment, then, is stated to raise power output from 37 bhp at 4700 rpm to 47 horse at 5200 rpm, a gain of 27 percent; maximum torque in stock tune is 48 lbs/ft. at 3000 rpm, which Alexander claim to increase to 54 lbs/ft. at the strikingly reduced turnover of 2600. This revs figure, prima facie, takes a bit of swallowing, but nevertheless seems to be confirmed by the 40 to 60 mph time we clocked in top gear, which we will return to in a minute.

In this report the tabulated data needs to be read in close conjunction with the text, and for a good reason. As supplied in the first place, the test car had the upgeared 4.2/1 back-end ratio, and a full program of timings was carried out on this ratio in accordance with SCI procedure. The resulting figures, with the one important exception of top speeds, are those in the spec chart. Two-way runs over the flying quarter-mile with the 4.2 axle produced an average of 75 mph. which, although exactly 3 mph faster than the unmolested Minor tested last August, seemed a slightly disappointing return for a power bonus of 27 percent. Purely for top speed, the car was obviously overgeared. So Alexander suggested that as a finale to our test they should switch axle ratios and let us try a fresh series of flying quarters on 4.55/1. This they did, with the result seen in the data panel - a best speed of 82 miles per hour and a mean of

Personally, if we were having a Minor converted and the budget wasn't too stringent, we would unhesitatingly specify the higher ratio. Geared at 4.2, and with 47 bhp under the hatch, the 1000 cruises amiably at the stock version's maximum without any apparent loss in smoothness. And that's a capability we wouldn't trade for 5 mph at the top end. The engine has moreover that feeling of indestructibility that moderate overgearing always imparts, and which accounts for the contentedness commonly seen on the faces of VW wolk

Most impressive of all the timed figures we took, is one that SCP's data table doesn't have a hole for — 40 to 60 in top in 17.4 seconds, which is around 6 secs. better than a standard Minor will show. As a further interesting comparison, our 40 to 60 time in third was only three seconds better, which begins to lend credence to Alexander's claimed pf/rpm relationship. In terms of pulling power, the Minor with Hadden embellishments has indeed come a long way since the row-'eralong-with-the-gearshift era of the late but not much lamented 803 cc ancestor.

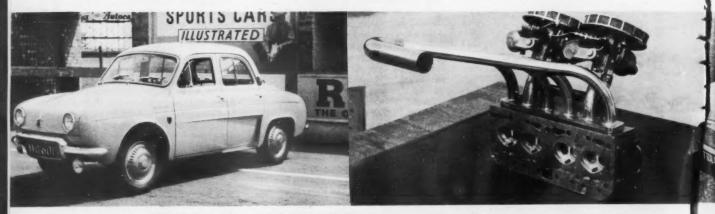
(Continued on page 86)

Alexander kit includes twin SU carbs on special manifold. It raises power to 47 hp at 5200 rpm.



# Straightforward British conversion lends useful extra chevaux-vapeur to the adolescent of the Renault family.

# DAUPHINE VITH A STING



Modified Dauphine sits under Sports Cars Illustrated sign in the pits at Silverstone. Modifications include two SUs, special exhaust and intake manifolds, stronger valve springs and compression hiked to 8.3/1.

UTRIGHT VICTORY for a Renault Dauphine in the 1958 Monte Carlo Rally - first-ever win on less than a litre in the big slalom - was the signal for several British soupvendors to start ruminatively pinching the tail of the rear-engined Belle of Ballancourt. Among those whose reveries crystalised into standardised power parcels were the Performance Equipment Company of Liverpool; K. N. Rudd Engineers of Worthing, Sussex; Downton Engineering Works Ltd., Downton, Wiltshire; and the Alexander Engineering Co. Ltd., Haddenham, Buckinghamshire. Earlier, of course, Regie Nationale Renault had themselves commissioned the great Amedée Gordini to contrive a really ambitious conversion for the Dauphine; this one includes a light-alloy cylinder head, altered valve angle and lift, and the grafting of a fourth ratio into the regular gearbox casing.

But, costing as it does about a fifth of a stock Dauphine's total price, the Gordini makeover has a necessarily limited commercial scope. All of the British conversions retain the iron head, some use a single SU carb and others two in substitution for the standard Solex and, with the exception of the Rudd kit, all four content themselves with the normal camshaft. Fairly typical of these packages, though naturally differing from the competition in detail, is the Alexander version we tested recently.

Core of this deal, in common with most of its kind, is the work carried out on the top end, consisting of planing the head face to lift the compression ratio from 7.25/1 to 8.3/1, reshaping and polishing the combustion ceilings, modifying the inlet ports and fitting stronger valve springs and hotter plugs. As far as the U.S. market is concerned, machinery doesn't presently exist for shipping old heads back to Haddenham and having their value offset against the new hardware; and unless Alexander are able in future to negotiate

U.S. dealerships that don't take a prohibitive cut from their profits, American Dauphine fanciers will have to continue buying outright, directly from the firm's h.q., and using their old crania as paperweights. They may, however, purchase the rest of the conversion, minus the modified fireplace, and then, if they wish, try their own

skill on the head and ports.

Externals of the Alexander ensemble consist of a combined intake and exhaust manifold mounting dual 11/8 in. (H2) SU carburetors at a semidowndraft angle of 20 deg. to the horizontal, a four-branch takeoff blending into a main pipe of increased bore, and a longitudinal absorbtion-type silencer. The inlet stubs are coupled by a balance pipe and the SUs have separate sandwich pattern air cleaners. To handle the raised combustion pressures and temperatures, Champion N8 plugs are used instead of the normal AC F10s. A complete set of new gaskets, including a head gasket where appropriate, is supplied with each kit, along with a special lever and operating cable for the mixture control; this lever fits on the floor of the car between the seats, where it's convenient to reach but not visible unless you know where to look for it.

Although you won't set a Dauphine's tires on fire as a result of these moderate and quite inexpensive tuning treatments (more about price later) they do add very considerably to the fun of motoring this wieldy little weevil, as well as enabling it to be cruised ad lib at speeds beyond the stock version's maximum. You can, that is to say, keep the speedo needle hovering indefinitely on a 70-per reading that flatters the Regie by the unusually small margin of around one mph.

Apropos flattery, if you have a filing system or a long memory and are therefore in a position to compare our Alexander performance figures with SCI's test data on a standard Dauphine (October 1956 issue), you may be puzzled by the fact that

the supposedly warm one is shown as being slower and, in several ranges, less accelerative than the á la carte dish. The explanation is that the car lent to our West Coast tester in the Dauphine's production infancy was undoubtedly much above average in performance; its mean maximum speed, for instance, was 74.3 mph, whereas our English contemporaries, Motor and Autocar, subsequently made it 66.4 and 65.5 mph respectively. Even California's superior climate could hardly account for a difference as big as that. The converted Renault, vide date table, gave a mean maximum of 73.5 mph, an advance of over 7 per hour on the better of the two British averages.

Apart from an increase in gas consumption and exhaust noise - with the engine idling and the car stationary you're never left wondering have you or haven't you fired 'er up, as can happen with the standard job - the Alexander tunesmithing imposes no penalties. Mechanical noise is not affected, starting is unhesitating, water temperature is hard to budge off the 80 deg. C mark, and throughout its speed range the dual-carb engine is at least as smooth, if not smoother, than its stock counterpart. Improved mixture distribution would account for the latter, of course.

Our fuel consumption figure of 31.2 mpg included all the performance test timings and represented a 14.5 percent sacrifice compared with SCI's 1956 results under roughly comparable conditions. It can be estimated that within the generally accepted meaning of the phrase "hard driving", i.e., maintaining around 70 mph for most of the mileage but not often in dulging in valve-crashing rev jags in the lower gears, something of the order of 34 miles per U.S. gallon should be obtain-

Although Alexander's speedshop equip ment includes dynamometers-as befits cor version specialists with probably the wide t ramifications in their field in Britain-they n d le

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# "Q" SHI TR-IO



only changes wrought on the stock Standard are the addition of another SU carb, hotter cam, increased compression and stiffer valve springs. Handling is improved by the addition of anti-sway bar under the front end.



N THE NOW nearly forgotten days of World War I, the Germans began a form of naval warfare that was then considered horrifying by some and just plain dirty pool by others—submarine and surface commerce raiding. Up would pop a submarine near a plodding merchant ship. The flat-hatted submariners would lob a shell across the bows of the merchantman and an officer would explain over the loud hailer that the crew had just so many minutes to take to the boats. Later, they didn't bother with the warning—they just let fly.

To the British, such shenanigans called for sharp counter-measures. The result was the "Q" ship, a seemingly innocent tub that was perfect bait to a sub captain, too easy to waste an expensive torpedo on when a couple of shells would do just as well. When the sub rose to the bait, it wasn't a floundering merchant ship that met the eye but a souped-up platform with enough firepower to drop the U-Boat in its own suds with one broadside. If the startled German elected to run for it he found the "bait" also had enough speed to run him down before he could get up enough revs to get moving.

It must have been very satisfying to the "Q" ship's crew.

The British have always been good at that sort of thing—seeming innocence that suddenly explodes into activity when least expected.

We have just sampled a latter-day automotive version of the "Q" ship and can report that even in civilized dress and taken in small doses getting the drop on one's fellow motorists can be a ball.

The "Q" ship referred to was cooked up by the Standard Motors people in the guise of the popular little Triumph 10. It looks like the Triumph 10, it sounds like the Triumph 10-in fact it is a Triumph 10. The only readily apparent difference immediately discernible to the showroom tirekicker is 150 dollars added to the price tag and on the street that doesn't show. In fact, even a cursory glance under the hood leaves one a bit clueless. A sharper look, however, reveals the fact that the massive air cleaner has not one but two outlets. Behind the double ductwork lie a pair of 11/4-inch S.U. carburetors where one small Solex sits in the normal version. If you're the type that peers under front ends, one more item shows up. This is a small but sturdy anti-roll bar where none was before. There it is-to all outward appearance a Triumph 10 sedan, a nice car but no tiger. Something to get around in, lug the kids to school, shop for groceries, commute with and other mundane chores calling for a nice economical little machine but not much in the way of charge. Sure it is.

That extra \$150 on the price tag buys something you might be able to see but it can be readily felt. It buys a reduction of 12 seconds in the time it takes to get up to 60 mph for one thing. It also buys the ability to scamper up highway hills without that annoying bogged down feeling usually associated with cars of less than a liter's worth of displacement for another. It also buys the ability to leave the car in third gear for any sort of maneuvering between 16 and 60 miles an hour. Finally it buys the necessary poke to carry a load of passengers without feeling a drop in performance usually entailed by extra weight in very small displacement machinery. Not that the stock version suffers terribly in this respect, it's just that the power-kit version does not.

The extra price brings material goods which cause the above phenomena, naturally, since these things are not accomplished by mere wand waving. The Standard soup kitchen has cooked up a smoothed out and shaved head which ups the compression ratio to 9.5 to 1, a fairly wild cam that brings the machine's peak power of 50 bhp in at 6000 rpm instead of the stocker's 40 bhp at 4500, double-wound valve springs to take the cam action and, finally, the previously mentioned dual carburetor manifold and carbs.

carburetor manifold and carbs. The results of all this cookery are immediately apparent—and fun. The car remains the same economical machine it was before. But instead of taking more than a half a minute to get up a head of steam on entering parkway or throughway, the power-kitted version charges up to 60 mph in 22 seconds. The little buzz-bomb will. charge along a reasonably level road at an indicated 82 miles an hour which means an actual 78-plus.

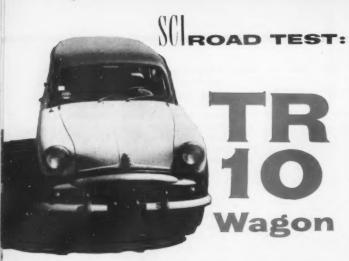
This is where the "Q" ship part comes into being. In normal trim the little Triumph is about average for its type in performance. The hotter categories of the small car set can leave it anchored to the road while it, in turn can keep up with some and run off from others. In its power-kit form though, it packs a surprise for the unwary in theoretically quicker machines—two strokes, 1100, 1300 and even 1500 cc sedans.

On one occasion we were traveling homeward at a gentleman's 60 miles an hour when another small sedan noted for its possession of a high rate of knots sizzled alongside, paused and then started hauling away. The word started is used advisedly because that's all he did do. A poke at the throttle sent the Triumph right up next to him. This continued for a bit until we pinned the throttle to the firewall and drew away from the other car. Our point proven we dropped back to our normal pace and let the man come up alongside. The look on the other driver's face made our day—after all, he'd picked the contest.

Naturally this sort of performance change entails definite alterations in the characteristics of the car. Peak torque on the power-kit car is reached at an engine speed of 4500, the point where peak horsepower is reached in the normal version. The power peak as mentioned earlier is way up at the top of the scale at 6000 rpm. Consequently you do not lug this car around in high gear. Anything under 30 mph should be done in third gear or even second if the liveliness with which the makers endowed the machine is to be enjoyed. In a rapid take-off the car is all unwound in low at 25 which is reached in little more time than it takes to snatch the lever into second gear. In second you can take it to 42. Third gear is good for 64 mph. In each case the engine runs freely and smoothly up to these peaks so delaying the shift until the last bit of performance is squeezed out entails no heart-inmouth worries about broken rods and other engine entrails.

One more item should be noted at this point. The gearbox in this and in the normal versions is the same unit and it is superb. While the ratios may not be as close as the sports car purist might want them (the lower two ratios are rather widely separated from the upper two) the action of the box leaves nothing to be desired. It is almost impossible to beat the synchronization in any gear, either going up or going down through the gears. This utter smoothness adds immeasurably to the speed at which gear changes are made and also adds greatly to the peace of mind of the sensitive operator. In short, this gearbox is one of the nicest we've used in any car, sedan or sports.

Oh, yes—availability. It isn't necessary that you purchase a new car to get the power kit. It can be installed at the same price of \$150 on your 1958 version by your friendly Triumph dealer or distributor or you can order it for your new sedan at the time you place your order. It is definitely a Triumph parts kit, not a proprietary item. In any case it is an awful lot of speed equipment for the price. —jpc



How to haul a lot for a little.



RECENTLY we decided to witness two great straightaway speed events: the Bonneville National Speed Trials in Utah and the NHRA National Championship Drag Races in Oklahoma City. With Los Angeles as a starting point the round trip involves just under 4,000 miles, most of which are on the distinctly rugged side. Our luggage and working requirements dictated a station wagon and the then newest one on the U.S. market was the logical choice—the Triumph TR 10.

In spite of the Stroms' enthusiastic three weeks with the sedan version of this car (SCI, Aug. '58) we felt grave pangs of doubt when we took delivery of the little wagon at the Gardena headquarters of Cal Sales, western U.S. distributors for Triumph. There we were, about to embark on a hurried voyage over vast and difficult terrain, in a vehicle with just 84 inches of wheelbase, and a 58 cubic inch engine putting out all of 40 bhp. Flat-country motoring would be challenging enough, but ahead of us was an endless succession of mountain ranges with passes as high as 11,000 feet. It seemed unlikely that the little car could do better than crawl over such profoundly three-dimensional landscape and we took to the open road with palpable resignation. Then the surprises began.

We carried a large volume of luggage which the externally small car absorbed with startling ease. It scooted through city traffic as expected: nimbly and energetically. Then we pulled the Mint Canyon grade to the Mojave (2,700 ft.), then the grades to Bishop (4,140 ft.), then the grind up Montgomery Pass (7,166 ft.) on the California-Nevada border. The little car flew all the way. As long as the revs were kept fairly high in top gear, downshifts to third were called for only on the highest and steepest inclines. An indicated 70 in top at the base of a grade usually insured 55 to 60 at the summit. To our delighted surprise we made the Los Angeles to Bonneville run in 14.5 hours, including stops for fuel, meals and sightseeing. We averaged 53 mph and 30.3 mpg. We rolled into our favorite home-away-from-home, the Wendover Motel, feeling pretty smug about our game little mount.

After four days on the Salt we took off for Oklahoma City, about 1,250 miles distant and separated from us by three fantastic passes in the Colorado Rockies. The most lofty was Monarch Pass, out of Gunnison, at 11,386 ft. For a

Two-toned paint (left) helps lower the tall TR Wagon. Three doors in rear make it possible to load odd-shaped freight.

With back seat folded (below left) large, flat rubber-covered floor can be used for cargo. High roof line helps in loading.

Wagon shares control set up (below) with the sedan. Floor-mounted gear shift lever helps in quick cog stirring.





half-mile or so at the summit we had to grab second gear and hum along at 30 mph. Over the hump we flew again, indicating 80 on the downgrades, cornering fast and keeping up a fine average. Driving for 28 hours straight through, with frequent stops for coffee and/or food, we averaged a shade under 45 mph to verdant Oklahoma City.

We dropped through southeastern Colorado and onto the Kansas plain at mid-day. The air temperature was about 120° F. and we bore into a pounding head wind of no less than 45 mph. Here the limitations of the small displacement engine were not to be denied. Ours labored with all its might against great meteorological odds. We had wished earlier that the car had been equipped with a water temperature gauge but now we wanted it badly. There was none and there was no sign of over-heating. So we continued to force our way through the Sahara-like weather that blasted a landscape that was simultaneously intensely desolate and intensely green. Then the little engine began to slow down, hurting from the heat. Not daring to shut it off and let it fry we reduced the load and gave it one-quarter choke. This cooling combination served until we reached a town and could turn cold water on the superheated radiator core.

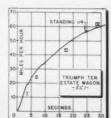
The TR 10's spark plugs were badly burned. The early warning provided by a temperature gauge would have prevented this: Triumph factory please note. Granted, the climatic conditions that fried our plugs were exceptional almost beyond conception, but such conditions do arise over a large area of our country. Our companion on the road, speed equipment manufacturer Dean Moon, burned up the engine in his big Detroit wagon, helpfully demonstrating that engine size is no criterion of survival against such punishment.

A high point of our tour was a stop in Alberquerque for new plugs and a top-end tune. There we found that The Motorsport Corporation, the big agency representing Triumph, is under the management of Harold Coole, one of the pioneer personalities in the imported car industry in the U. S. and one of the most competent and reputable executives in his field. We left Coole's progressive establishment with the feeling that any friend of SCI would receive the same royal treatment that we were shown.

At the completion of our 4,000-mile run we knew the



Engine compartment is anything but crowded. Sturdy little 948 cc mill churns out 40 bhp.



(Continued on page 96)

#### TRIUMPH TEN ESTATE WAGON

List Price, POE	
U.S. Importer	Standard-Triumph Motor
	745 Broadway
	New York 19, N. Y.

#### PERFORMANCE

#### TOP SPEED:

Two-way average							72	mph
Fastest one-way	run	*					73	mph

#### ACCELERATION:

From a	mph.									Secs.
	mph.									
	mph.									
	mph.									
Standi										
Speed										

#### SPEED RANGES IN GEARS:

I													zei	o	to 1	69
II													6	to	33	
III													10	to	57	
IV													15	to	ton	

#### SPEEDOMETER CORRECTION:

Indica	t	e	d										A	tu	8
30														29	
40														38	
50					,									48	
60														57	
70														66	

#### FUEL CONSUMPTION:

Hard driving					 	. 28	mpg
Average drivi	ng	(1	und	er			
60 mph)					 	. 35	mpg

#### SPECIFICATIONS

#### POWER UNIT:

Type In-line four, water-cooled
Valve Arrangement Pushrod ohv.
Bore & Stroke
Stroke/Bore Ratio
Displacement
Compression Ratio
Carburetion by Solex downdraft, single throat
Max. Power
Max. Torque
Idle Speed

#### DRIVE TRAIN:

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Final		à	-	å,		-		e.		64	0														4.55	
IV					×	*			ĸ			×	×	×	×					×	×				1.00	
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11			*	×		*					×			*	*				*	×					2.46	
1				8	×					*			×					×	×	×	÷			×	4.27	
Transmission									I																	

#### CHASSIS:

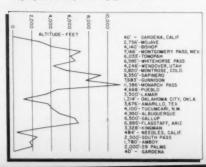
Wheelbase
Tread front and rear 48.5 in
Suspension, front Coil & wishbone IFS.
Suspension, rear Semi-elliptic.
Shock absorbers Direct-acting telescopic.
Steering type
Steering wheel turns L to L 2.5
Turning diameter
Brake type 2 LSF/1 LSR
Brake lining area 68 sq. in.
Ting -in-

#### GENERAL

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in.

#### RATING FACTORS:

Bhp per cu, in 0.69	
Bhp per sq. in. piston area 2.07	
Torque (lb-ft) per cu. in 0.87	
Pounds per bhp - test car 44.0	
Piston speed @ 60 mph 2025 fpm	
Piston speed @ max. bhp 2500 fpm	
Brake lining area per ton	
(test car)	ì,
Mph per 1000 rpm in top gear. 14.8	



# THE PASSIONATE PIGNATELLI

by Robert G. Lurie

OW THAT American drivers are getting to be important on the factory teams, every once in a while somebody looks up Joe's Gas Station in the phone book and tools over the Queensboro bridge to talk to me.

Only a week ago, this Englishman — a jaunty little guy with a fuzzy cap and tweedy chin-whiskers — comes out to interview me. "Weren't you the premier American driver on the cawntinent, old chap?" Well, I was. That is, the first American ever with a seat on a factory team — and with Pignatelli at that. When they were great. The year after they won the championship, with Julio Fandango Gomez himself.

Then old chin-whiskers – Cuthbert McWhortle his name is – goes and brings up the other part of the story. "I say, aren't you the chap who ran off with the Pig during the Thousand Miles?"

That does it, so I breathe garlic in his face (British motoring journalists never get used to this, even after five Tours of Sicily) and send him off in a huff. They all go off in a huff, and that's why nobody ever writes me up.

But I was on the Pignatelli team. And I was the first American to go pro. I did run off with a car in the middle of the Mille Miglia, but nobody until now really knows why. But before I tell you how I got fired out of Pignatelli, I gotta tell you how I got hired.

It all has to do with the import-export trade, and let me tell you, in case Mr. Hoover reads this, that I don't know a thing about it. I can guess, though, and my guess is that the Big Man Himself didn't buy up the Pignatelli factory because he likes red cars. I guess he was interested in the fact that they shipped all their production to America, and who ever heard of a customs inspector looking into cylinder bores or DeDion tubes?

The Big Man made my uncle Dino Partelli the president of Pignatelli (U.S.) Import Corp., although all Dino knows about automobiles is that you can get bullet-proof glass on a Cadillac for \$1,800 extra.

Every car — sports racers and the G.T.'s — would go to a big warehouse in Baltimore for "overhaul" before delivery to the dealers. Then the poor dealers would have to put the whole car back together, like the overhaul crew was looking for kilo packs of white powder rather than tuning the engines. I never did find out because I never even looked curious. This kind of curiosity is for guys that own bullet-proof vests.

But uncle Dino was running the unloading — I mean importing — operation. And he hired me right here by the Esso Extra pump. Right here. Not in Turin or at Sebring. Out of the goodness of his gentle heart he just suggested to Signor Pignatelli that I might be good enough to join the team. And, strangely enough, the old man said yes, without ever having seen me drive.

So I was hired, and reported for practice at Sebring.

If there is just one reason why I got fired out of Pignatelli, it's one man with a long string of names — Count Alexis Alfonso Vhlavianos, Marquis of Valladolid, Duke of Parma, Right Honorable Baronet of Chinchester. He's half Greek, half Spanish, with enough English, Sicilian and American thrown in to account for sixty or seventy million bucks and an overactive libido. He's probably the second best driver in the world, he's a natural athlete, he's handsome, charming, rich, noble, and drinks champagne mixed with Campari. Me, I'm not even charming. Nevertheless, Alexis, he took a big dislike to me from the first minute we met, and it got mutual about one tenth of a second later.

The trouble started right away at Sebring — my first race for Pignatelli. I was his co-driver, and of course, he was to start the race. Comes ten o'clock and no Alexis. He had disappeared the evening before with Leigh Scully, the famous American model, and they hadn't made it back in time for the start. Leigh is quite a dish, what you might call the toast of two continents, but I always felt a little bit insecure when she started belting the scotch. But then, I never really got to know her well. In any case, I jumped into the 340 Pig and took off at the start. I did five laps, lying fifth behind the Ferraris and Astons, when I missed a shift and burst the engine. When I walked back to the pits there was Alexis, hopping mad. He tells me in that lovely Oxford accent that I'm a meathead who can't drive, adds a couple of very non-Oxonian references to my ancestry, and invites me behind the pits.

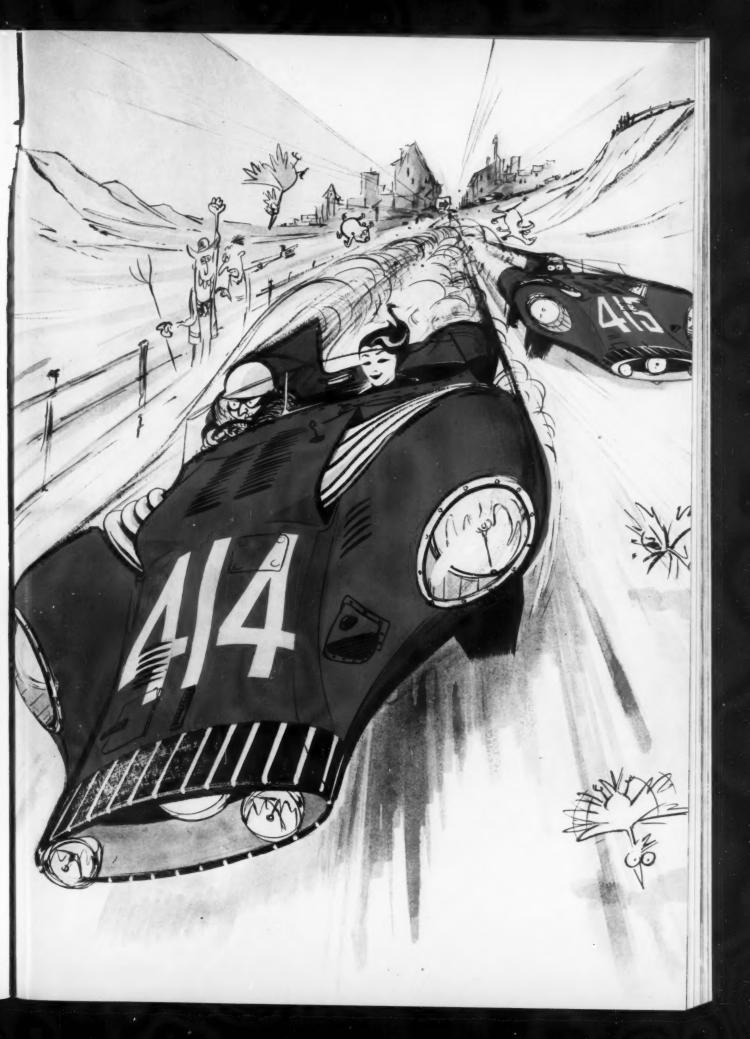
Now, in a fist fight, Count Alexis is fast and strong. He danced around so much he split his black skiing trousers. He hit me twice on my large Italian beezer. I'm slow but stronger. I hit him once. In the chops. Fight is over. They carried him back to the trailer.

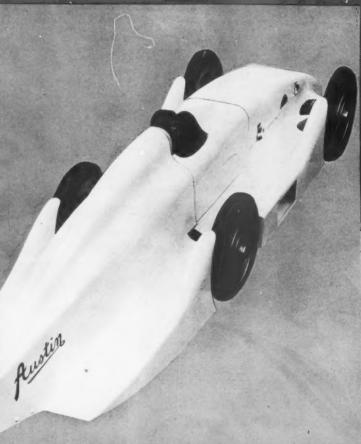
Signor Pignatelli said nothing, but Guiseppe, the chief mechanic, summed it up for the team. "Vhlavianos, he *like* fista fight. No follow him too close."

After Sebring, we went to Rheims for the twelve hours. Everybody was there, all with new cars. Pignatelli was fastest with our three 4.9's, but very rough on tires. I figured we'd have to have three rear wheel changes during the race, but we still had a fine chance of taking one, two, three. Only thing, I figured our chances against Ferrari and Jaguar, not against the guys on our team.

It wasn't Vhalvianos this time. Or Peter Allen, or Reggie Naysmithe-Smithe, or any of the other drivers. It was Guisseppe and Salvatore and Dominico and Caesar. The mechanics. The sweating, busy, self-sacrificing mechanics who live with you and die for you, who work twenty-four hours steady before race day. And then comes race day. Let me tell you what really happened to the Pigs at Rheims.

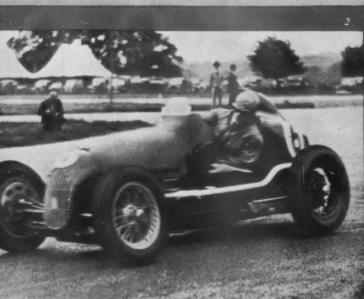
Alexis was running first from the very start, just holding off the top Ferrari. Allen and

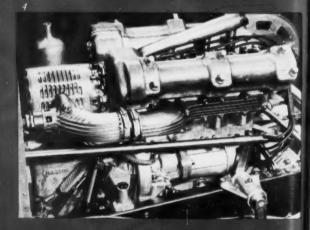




# SEVEN FIFTY H-BOMB

'H' symbolised the smallest active class in prewar racing and records. And Austin, with their screaming Sevens, were always ready with a bomb to fit the formula.





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- 1. Side valve record car looked like scale model of Campbell's Bluebird. Its two-bearing crankshaft tolerated engine speeds close to 10,000 rpm.

- 2. Last of single-seater Austins screams through bend at prewar English race meet. Car was powered by fantastic blown OHC 750 engine.

  3. Side-valver has a go at world record along Southport sands in England. Fairings on front wheels were removed to make car more stable.

  4. Supercharged Austin had blower mounted on the rear of OHC engine. Huge SU carb fed mixture to puffer. Ribbed inlet manifold kept everything cool.
- 5. Only drivers with small feet need apply. Handlers of blown Austins almost literally put their feet into the carburetor when trying for added urge.

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ERELY BEATING plowshares into swords and pruninghooks into spears, as projected by the prophet Joel, was one thing, but it was something else entirely to make over the Austin Seven into a brilliant racing car. The late Herbert Austin, millionaire industrialist with a hot-rodding itch, had the vision and stick-at-nothing zeal to essay this improbable transformation, and he brought it off.

The outcome was a sizzling seven-fifty that held unchallenged sway in Class H until the advent of Cecil Kimber's MGs in the small 30's, and thereafter kept up a running fight with the mighty Midgets clear to the outbreak of WW2. A sidevalve Austin was the first seven-fifty to hit 100 mph in Britain, and the first one anywhere to cover a mile and kilometer at a three figure speed. Sevens with flat heads won their class in all six of the Brooklands 200-Miles Races they contested, and were two years ahead of the Kimbergarten in scoring a Brooklands 500 victory. When the English track relapsed into eternal rest in September of 1939, Class H lap records for two out of the three established Brooklands circuits stood to the credit of Austins, albeit of the later DOHC type.

Too, in spite of the naturally superior performance of the twin-cam car that Austin sprang in 1936, it is an odd and often forgotten fact that the highest 750 speed ever recorded in Britain—the world hub of Class H activity—was set by a sidevalve Seven. On Southport beach, Lancashire, in 1934, the s.v. streamliner averaged the remarkable speed of 122.74 mph for a two-way kilometer, driven by Pat Driscoll. After a quarter of a century, this still stands as a British record in Class H and will likely never be beaten now. In its day, and for years afterwards, it established the Seven as the world's fastest s.v. racing car,

irrespective of capacity. Driscoll, one of the envied elect chosen by Herbert Austin to handle his Longbridge lepidoptera in races, hillclimbs and record attempts, has good reasons for remembering this Southport safari. The cockpit of the white records car was so narrow, and its steering wheel so smallabout nine inches diameter-that the driver's attitude was reminiscent of a very refined Chinaman addressing peas with chopsticks. Going in straight lines, the theory was that Pat wouldn't need freedom to spread his elbows for steering leverage. and the Southport course, on paper, was a straight line. In practise, though, due to heavy squalls coming in from the sea, his own personal course was anything but straight. At about 130 he went right out through the rope barrier fringing the strip, rejoining it a couple of hundreds yards alongshore.

First time out, going down wind, he clocked 140, a promising step in the direction of a two-way average in excess of the existing MG record, which was around 128. However, due to an unhappy combination of two factors-the nature of the timing apparatus and the shape of the car-Driscoll wasn't able to make a return run the same day. Primitively, as it seems in these sophisticated times, the clocks were actuated by thick threads stretched taut across the beach at each end of the kilometer. The first thread snapped obediently on contact, but the second one, presumably set slightly higher off the ground, rode up over the curve of the hood and

snagged itself on the first projection it came to, which was Pat's nose.

Bleeding profusely and uttering gripes of wrath, he called the whole thing off pending repairs to schnozzle and an improvement in the weather and the state of the sand, which had been atrocious.

Up to here the story is credible, but its sequel, although also true, really takes some believing. Three days later, with all forgiven and forgotten, Driscoll tried again ... and for the second time the damn thread kept right on coming until his nose stopped it. It was, of course, this repeat attempt that resulted in Austin's durable British record of 122.74 mph.

The Sevens raced by Austin from 1923 until '34 had been basically standard productions, rebodied to suit their several purposes and with varying degrees of Fahrenheit fanned into them; company policy during this period was to forestall any suggestion that the factory was lavishing ad lib gold on racing and record breaking, as indeed it wasn't. But along towards the end of 1933, obviously needled by MG's mounting score of speed successes, Sir Herbert Austin made a compromise: he wasn't marketing an ohy car and didn't plan to, so for the present anyway he considered himself committed to sidevalves for racing and records, thereby accepting a formidable handicap visá-vis MG with their single ohc.

But if he was stuck with his flat head, at least he'd hedge to the extent of taking carte blanche, or something closely approaching it, within the s.v. framework. And this was where Tom Murray Jamieson came in.

Jamieson was a freelancer of really outstanding talents, some would say genius, whose death in 1938 - he was killed when a berserk Delage plowed into the public enclosure during a Brooklands race - was to deal British automotive engineering a severe blow. On his own account, Jamieson had earlier carried out some impressive hop up experiments on an Ulster model Seven, including supercharging it with a Roots type blower he's designed and made himself. News of this exercise reached Herbert Austin and his influential son in law, Captain Arthur Waite, who had himself played a forefront part in Austin's racing enterprises all along, in both driving and domo roles.

In the Fall of 1933, then, Austin hired Jamieson to cook up a seven-fifty side-valver that would (it was hoped) smooth the smiles of a few of those octagonal faces at MG. Tom set up his easel at Longbridge and went to work with zest. His labors had swift and electrifying results, including the pale and interesting record breaker we met on Southport beach a few columns back.

The Jamieson flat-head's eventual output was something over 70 bhp; hitherto unprinted, I believe, is the fact that its rev limit was 10,000 per minute, using a two bearing crankshaft. The absence of center support for the crank was traditional Seven practise, for better or worse (indubitably worse); and, following the sidevalve precedent, the amiable old knight of Longbridge was unwilling to countenance an extra bearing for racing while his stock productions lacked it. There were also some token attempts to keep the outside of the engine looking as

standard as possible, though the deception fell down — assuming you could get close enough for a look under the hood — on account of the constellation of studs used to fix the head to the block and the block to the separate crankcase.

The latter was a recognisable derivative of the regular case, though drastically modified to provide takeoffs for a drive to the Jamieson blower, mounted vertically in front of the block and generating up to 24 psi. and to dual magnetos, one each side. These mags, curiously enough, were of different makes — Scintilla on one side and Bosch on the other. They fired two plugs per cylinder, of course.

The crankshaft, although denied anything to lean on in the middle, was reasonably robust dimensionally, with a journal diameter of. I believe, 1½-in.. maybe a bit more. Contrasting with all the theretofore Sevens, Jamieson's sidevalve masterpiece had a four-speed gearbox, fourth being at the front of the gate. It retained the classic Seven chassis and suspension layout, using a simple A-frame, single transverse front spring and radius rodded axle, and quarter elliptics in back; but there were numerous and important embellishments on this rudimentary theme. Dry weight was about 840 pounds.

Apart from their record breaking achievements, already briefly touched on, the Murray Jamieson s.v. Austins competed successfully in hillclimbs, straightaway sprints and circuit races of varying character and duration. Apart from an occasional tendency to burn up exhaust valves in long races, these cars were remarkably reliable. Short on torque and virtually bankrupt of flywheel, they weren't easy to take off the mark from a standing start. The technique, as Driscoll recalls it, was to wind up the elastic to 6000 rpm and just jerk your foot off the clutch. Wheelspin did the rest.

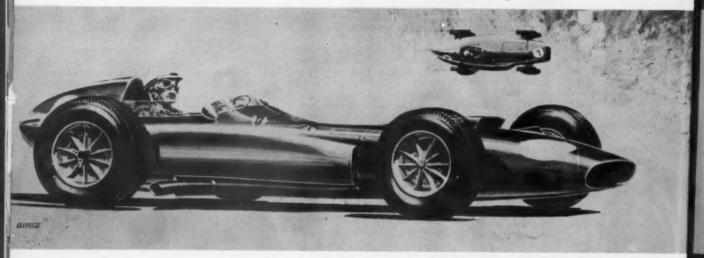
The body of the sidevalve records car, as elongated as a French loaf, was also designed by Jamieson, who incidentally was a driver in his own right. The first record attempts with this car, made at Montlhéry, were entrusted to Jamie himself; carried away by his enthusiasm, and never a man to set an exaggerated value on his own life, he made a series of bloodchilling rushes around the French track, zooming to within inches of the top of the precipitous banking in efforts to grab a loan from gravity on the run-in. When Austin heard what went on he ordered the designer home and the Southport expedition was mounted.

The regular Austin drivers - Charlie Goodacre, Pat Driscoll, Charlie Dodson and later Bert Hadley - would have cut off their right hands if Jamieson had asked them, but at the Longbridge plant he wasn't so universally beloved, due, one suspects, to jealousy of his great gifts. When WW2 broke out, someone at the factory took it on himself to send the surviving stock of parts for the Jamieson designed cars to War Salvage as scrap. Made to almost holy standards of precision, from the finest and most expensive materials, these bits would have been worth their weight in gold for their appointed purpose, though naturally their value as scrap metal was derisory.

At last! An American-built Grand Prix car.

# Scarabs FOR FORMULA ONE

by Griff Borgeson



OR THE first time in racing history American Formula One cars will campaign the World's Championship Grand Prix circuit in Europe. At this writing the first Formula One Scarab engine is in pieces that are being machined in shops all over Los Angeles. The first chassis is nearing completion. Maybe the combination won't run well . . . maybe it won't even run. But the blood, sweat and brains of many good men are being poured into this project and it shows exciting

When Reventlow Automobiles Incorporated announced the Scarab sports car (SCI, June) no confident claims were made, no sanguine hopes expressed. The results, such as they might be, were left to speak for themselves. And they did. The sports Scarabs were essentialy unbeatable their first season out. The same organization that accomplished that remarkable feat is, of course, the one behind the new grand prix car.

This is how it came to be. For years Lance Reventlow had wanted to build his own competition machines. This remained little more than an idle dream until he spent the 1957 season in Europe racing, visiting factories, observing. He noted that fine race cars often are built in very humble surroundings and that the builders are human; they make mistakes and have no magic touch. He lost his awe and saw that what they were doing was in his own power to do. Late in '57 he decided to go ahead with the Scarab project.

Reventlow's long-range goal was to build

and race F1 machines but he chose to begin with sports cars because an excellent and inexpensive American production engine for this use was available in the Chev V-8. The plan had been to race the sports cars in Europe for a couple of seasons and then, with the benefit of that background, to initiate a Fl program. But just as the first sports car was nearing completion the FIA changed to a three liter limit for that class and the sports Scarabs were shut out.

To compete on the international championship level RAI would have to come up with a three-liter engine. A Meyer and Drake Offy of appropriate displacement was tried; it had ample power but was far too heavy. Ferrari or Maserati might have been turned to as suppliers but that would have voided the basic premise, which was to build an American race car.

An engine would have to be designed and constructed from scratch. It would be just as easy to develop a 2.5-liter F1 engine as it would be to build a three-liter sports car engine, while chassis and bodies for the grand prix cars would be slightly cheaper to build. The choice then of taking the F1 course was forced on RAI and work began on the GP project before the sports cars had hit their winning stride.

To complete the setting for what is to follow let's take a quick look at the cast:

LANCE REVENTLOW-President and founder of RAI. Cultured, a shrewd business head, very knowledgeable in the field of high-performance cars. Winner of nine first places in '58 on Scarab. Age 22.

WARREN OLSON-General manager of RAI. Five years of college in Mech E. In sports car racing since early 1950's. Runs the plant, racing activities and the pits.

JIM TRAVERS, FRANK COONS-"The Rich Kids" behind Vukovich's two Indianapolis wins with a brilliant background in pro track racing. Founders of Traco Engineering. Formerly racing consultants to Ford Motor Co. and now under Olson in management and development of Scarab program. Ages 38, 36.

DICK TRAUTMAN, TOM BARNES-Along with Travers, Coons, Daigh and Remington they were pioneer hot rodders on the dry lakes. Worked for Kurtis Kraft on Indy-type cars, built highly successful Trautman-Barnes Special sports car. They head the chassis department. Ages-30's.

CHUCK DAIGH-Veteran of hot rodding, roadster and midget racing, Indianapolis equipment, Mexican Road Race, Ford's racing department and very active in sports car racing in recent years. Fine mechanic and cool, inexorably-aggressive driver. Seven firsts on Scarab. Age 35.

MARSHALL WHITFIELD - Graduate mechanical engineer, a part-time employee on the sports car project, full-time on FI car. His responsibility is the theoretical area, in which he has proved real com-

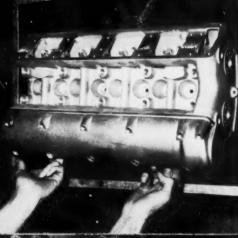
petence. Age 23.

PHIL REMINGTON-Another race-car artist who can do anything. Associated with outstanding midget and hydroplane contenders and with Eddie Meyer, Howard Keck, Sterling Edwards, Stewart Hilborn

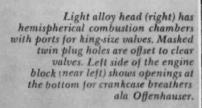


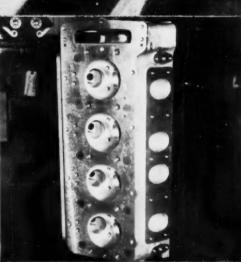




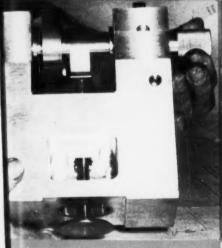


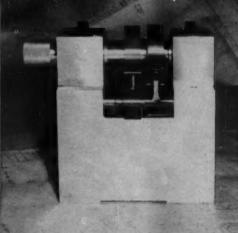
Lance Reventlow (left) examines partly-machined block. His drive and enthusiasm is responsible for the new Formula One machines. Here one cam cover is fitted to the head before machining and complete assembly. Two 14 mm spark plugs are used per cylinder.









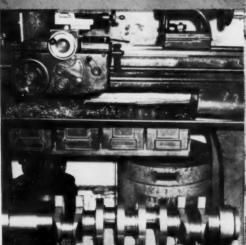


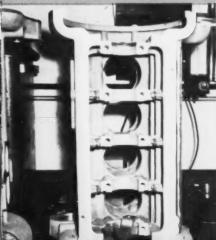
Jim Nairn turns model camshaft to check operation of desmo valve gear. Prototype section of Desmodromic valve gear. Cam lobe on left opens valve one on right closes it.

Sturdy crank (near right) should be proof against missed shifts. Engine has five main crankshaft bearings. Meaty bearing cap (bottom center) is fastened by ½-inch studs plus horizontal cap screws. Further strength is added when the sump is installed.

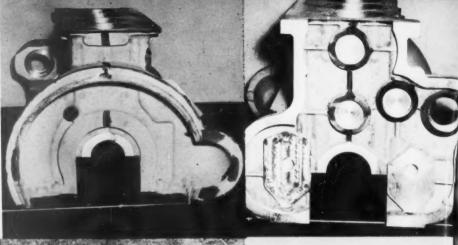
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Rear view of semi-finished engine block (right). Slightly over-square dimensions of power plant can be visualized from this angle. Front end of block shows room for train of ten spur gears that will run double overhead cams that actuate desmodromic valves.

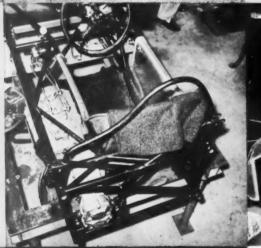


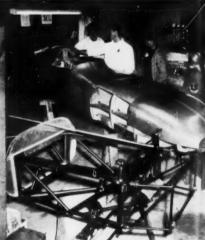




Halibrand-manufactured wheel (left) nestles finned brake drum to illustrate how it helps pump cooling air to braking surfaces. Drum for aircraft-type expander brake has 25 deep fins to dissipate heat.

Five-speed gearbox is situated alongside the driver with Halibrand quick change rear end hooked to Corvette gears. Aluminum skin (far right) is formed over wooden "buck" in Emil Diedt's body shop. Driver will sit well down in car with body lines flowing around him into head rest.







Alloy panels (far left) are trial fitted during building of first body. Tail end has a tucked in "kicked dog" look. Side view given shows placement of "saddle-bag" gas tanks. Scarab sports car in foreground is being built up for street use by the boss of RAI.





and FMC. One of the several RAI "geniuses." Age 37.

EMIL DIEDT-German-born. Is a graduate of the old Harry Miller team and has been building outstanding race cars for 37 years. His finest creations were the front-drive Indy Blue Crown Specials; he both designed and built the chassis and front-wheel drives. Heads RAI body department. Age 59.

LEO GOOSSEN-Author of nearly every significant American racing engine built since the first Miller straight eight. Design brain behind Miller, Offenhauser and Novi, to name a few. Chief Engineer of Meyer & Drake, consultant to RAI. Age 59.

Each of these key figures has made valuable contributions to the Scarab Fl program. There is not space here to spell out their respective credits.

A new engine was needed and Goossen was contacted, he being the one man in America who had the background needed to design a race car power plant. It had been a good ten years since he had been given such an opportunity-since he had drawn up the Novi-and he entered into the project with enthusiasm. Traco was assigned to work with him and to collabo-

rate on basic design.

Travers and Coons previously had been retained as engine experts by Ford. In exchange for permission to study Ford production methods Daimler-Benz had donated a Mercedes-Benz type 300 SLR to the Ford Museum in Dearborn. Ford brought Travers and Coons to Dearborn to tear the engine down, make a thorough study of it and, with Goossen, to design a desmodromic-valve head for FMC engines to be used in competition. This work had been completed when the Automobile Manufacturers Assn. spoke for the industry when it severed all connections with competition based on speed or performance. Traco purchased from Ford the engineering data that had been developed on desmo valve action, which proved to be a fortunate concatenation of events when the Scarab F1 project began.

Among the infinite number of choices to be made when laying out a new engine is the number of cylinders among which its displacement is to be divided. Within limits, the greater the number of cylinders the higher the power output. Also greater are weight, complexity, man-hours required and cost. One of the great penalties inherent in the few-cylinder engine is relatively greater valve weight and its adverse effect on valve float. But this penalty could be overcome by replacing the conventional spring action with positive-closing desmodromic action, about which Travers, Coons and Goossen already were experts. An in-line four was chosen with its cylinders lying horizontally in the interest of minimum frontal area.

Another reason for the choice of the four-banger was flexibility. V-8 and sixcylinder layouts were considered, includng their relationship to the next FIA ormula change. If Formula One does go o 1500 cc, the four would be best from the veight standpoint. The wet-linered engine vas designed to operate with displacements anging from 1500 to 3000 cc in the hope hat whatever the next formula may be he engine can be converted to it quickly nd economically.

The light-alloy crankcase and block are

integral, the head detachable. The case extends far below the five main bearings and its bottom surface is flush with the bottoms of the deep main caps. Each cap is retained by a pair of 1/2-inch studs which extend two inches into the caseblock casting. When the sump is bolted in place it bears against the bottoms of the main caps and the main bearings have almost 360 degree support.

The crankshaft is machined from a billet of 6150 chrome-vanadium steel, the alloy which has served outstandingly in the big Offies. It is 100 per cent counterbalanced and is hollow-drilled for lightness. The unbalanced forces inherent in the in-line four should be entirely absorbed by the great strength designed into the crank.

Driven off the nose of the crankshaft is a train of ten spur-cut gears which provides the drive to the Hunt Scintilla magneto, two oil pumps, water pump and dual overhead camshafts. The extremely large valves are inclined 42 degrees from the vertical. Each valve has its own opening cam and closing cam (ground by Racer Brown, who brilliantly cammed the sports cars) and a simple shim adjustment is provided which appears to be an improvement over the Daimler-Benz eccentricbushing adjustment..

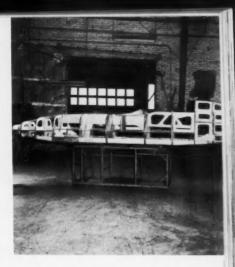
Without the limitation of valve springs it is possible to use tremendous valve lift. One-half inch will be used initially; this can be increased if found desirable. The ports are also extremely large. The inlet ports follow the European practice of being offset at the manifold relative to the valve center-line in order to induce a swirling of the mixture as it passes the spark

plug. Because of the extent to which the valves fill the combustion chamber the spark plug had to be offset far to one side. In case this should have an adverse effect on combustion, two plugs were provided for each cylinder, one offset to the front and one to the rear. One of the two plug bosses may be the receptacle for Robert Bosch direct fuel injection. Tests will be run using this system, Hilborn injectors and Weber carbs and the best of course will be chosen.

The engine is expected to develop its peak output at about 7500 but to be capable of winding to 8500 or 9000. Until dynamometer testing begins output can only be estimated. At the outset the first engine might put out about 235 bhp. Some weeks of development should get this up to the 250 range. During the 1960 racing season it could be yielding 265 or 270. Claims of outputs in excess of 280 bhp from 2.5 liters are much to be doubted.

The F1 Scarab's frame is a three-dimensional truss-type structure made of 4130 chrome-molybdenum tubing. It weighs less than 75 lbs. There is diagonal bracing even behind the driver and its torsional rigidity is high according to tests.

The engine mounts in the frame with its crankshaft on the left hand side. The means of transmitting its power to the rear axle is simple, direct and efficient. There is a two-plate Lockheed clutch, a U-joint. a driveshaft parallel to the frame rails, another U-joint, then a four-speed transmission beside the driver. This is bolted to a rear transmission case which contains a reverse gear and a fifth forward speed for starting. This case in turn is bolted

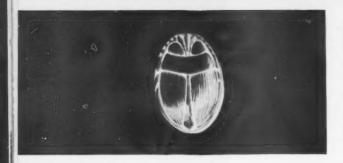


Profile of wooden buck (above) gives a good idea of the flattened torpedo look that will be characteristic of the finished machines.

Wheel hub end of housing showing drilled ears on spin off hub. Assembly is all machined, and much lighter than it looks.

Collar mounted on rear A frames holds universal joint housing. There can be no doubt that the wheel is positively located with this arrangement.





#### CHASSIS

Frame	Three-dimensional truss type
Frame Materials	
Wheelbase	
Tread	
Suspension, front	
Suspension, Tront	wishbones, ball joints, anti-roll
	torsion bar.
Suspension, rear	
Suspension, rest	unequal-length wishbones
Shock Absorbers	Mannes and Koni telescopie
Limited By	
Driveshaft	
Universal Joints	pen
	Type—Spicer
	Splined-One
Rear End	
Differential	
Final Drive Ratios	
Rear Axles	
Universal Joints (rear axles)	
Spindles	
Steering	
Steering Turns	
Master Cylinders	
Brakes	Experimental aircraft drum type
	Lining Area-190 sq. ins.
	Cooling-Turbine Blading
Hubs	Own
Wheels	
Tire Sizes	Range from 550 to 650 x 15
Fuel Pump	Depending upon carbs or Bosch
	or Hilborn injection
Fuel Tank	Welded aluminum; 35 gals.
Weight, dry	1000 to 1100 lbs.
Body Material	.051 Aluminum
Body Framework	
2007 2 100000010100000000000000000000000	bulkheads
Instruments	
	temperature, oll pressure
Paint	Blue metallic, white trim

Make	Scarab F1.
Builder	Reventlow Automobiles, Inc.
Type	In-line four, horizontal.
Year	
Displacement	149 cu. in.
Bore & Stroke	3% x 3% in.
Port Diameter	1% intake
Valve Size	1-11/16 exhaust
Valve Size	1.89 in. intake
	1.83 in, exhaust
Valve Seat Angle	45 deg.
Valve Inclination	42 deg.
Valve Stem Diam	% in-
Camshafts	Racer Brown grind.
Valve Lift	
Valve Timing	
	Intake closes 50° ABDC
	Exhaust opens 54° BBDC
	Exhaust closes 20° ATDC
Valve action	
Valve action	Spar Coar
Connecting Rod	Length-61/8 in. center to center
	Cap bolts-2-7/16-in.
	Big End Diam, -21/4-in.
	Big End Width (length 15/16 in.)
Distance	
Pistons	
	Clearance012-in.
	Bushing-Bronze Lube-Pressure Oil
	Pin Retainers-Snap Rings
	Type-Siluminum
	Wrist Pin Diameter-15/16-in.
	Pin Offset?-No.
	Compression Rings-2
	Comp. Ring Width-5/64-in.
	Oil Rings-1
	Oil Ring Width-3/16-in.
Crankshaft	Chrome-vanadium billet, fully
	balanced
	Main bearings-5
	Main bearing diameter-2%-in.
	Main bearing length-7/8-in.
	Main bearing clearance002-in.
Cylinder Head	Detachable, light alloy
Compression Ratio	Ten to one
Cylinder Type	Wet liner
Cylinder Type Crankcase Type	Integral With Block
Carburetion	weber Carb.; Hilborn or Bosch
	Injection
Radiator	Aluminum Core
Water Pump	Centrifugal, ½ engine speed
Ignition	, nunt Scintilla Magneto, nange-
Ignition	mounted
Ignition	mounted
Ignition Spark Plugs Starter	mounted . 14mm. . Portable
Ignition Spark Plugs Starter	mounted . 14mm. . Portable
Ignition  Spark Plugs Starter Horsepower	mounted . 14mm. . Portable . 250 @ 7500, approx.
Ignition Spark Plugs Starter Horsepower Flywheel	mounted . 14mm Portable . 250 @ 7500, approx Steel billet
Ignition  Spark Plugs Starter Horsepower Flywheel Clutch	mounted 1 4 1 Portable 250 @ 7500, approx. Steel billet Lockheed 2-plate
Ignition Spark Plugs Starter Horsepower Flywheel	mounted 1 4 1 Portable 250 @ 7500, approx. Steel billet Lockheed 2-plate

to a modified Halibrand quick-change center section which contains a Z-F limited slip differential. This layout permits the driver to sit on the very floor of the car.

The whole transmission assembly is of RAI design but, interestingly, the gears for the four forward speeds in the front gearbox are production Chevrolet components. This is not a project in which cost is no object and the availability of appropriate production gears constitutes an important saving. The gears are undercut for lightening. The production quick-change rear end makes available an almost limitless selection of final drive ratios.

An interesting detail is the use of two Rzeppa "constant velocity" universal joints and one sliding spline per axle shaft. The former should go a long way to prevent drive train failures which too often sidelined the sports Scarabs last year. With ordinary Hooke-type U-joints at each end of a shaft, even when the pair is installed properly (one 90° to the other), there is still a change in angular velocity across the joints which creates undesirably high stresses. Bigger, stronger joints are heavier; better (but more expensive) are the Rzeppas.

In the choice of a suspension layout for the new car the designers decided in favor of the full-independent approach. All the competition uses the de Dion system at the rear and RAI had no illusions about its inability to out-de-Dion Ferrari, Maserati or Vanwall. If they are to be beaten they must be beaten on the challenger's own grounds, not on their own. An advantage had to be found somewhere and the full-independent—used up to now only by Cooper and with considerable success was the obvious course.

So, suspension at both front and rear is by coil springs and unequal length wishbones. Negative camber increases under deflection and it is felt that the F1 Scarab will handle at least as well as a good de Dion car. A potential advantage is the adjustability designed into the system. The rods on the ball suspension joints thread into the wishbones and permit quick and easy adjustment of caster and camber and, at the rear, of toe-in.

Brakes are another area in which it is easy to copy and to be as good as the competition but no better. The competition has gone over totally to disc brakes, so RAI searched for other possibilities. Whitfield pressed for use of the aircraft expander-type drum brake. This type of brake uses a flat pneumatic tube in place of metallic shoes and has among its advantages light weight and full 360-degree contact of lining with drum at all times that the brakes are in use. Preliminary tests indicated a tendency of the friction material to overheat the tube but this was corrected by Traco's Harold Mauck who inserted copper strips between tube and lining and extended them out into the

These internals became the core of a front brake assembly that, including brake, drum and attachments, weighs 12 lbs.—much lighter than any disc assembly that might have been used. Since unsprung weight becomes increasingly critical as car weight decreases and since the complete car is expected to weigh between 1000 and 1100 lbs. wet but without fuel, every reduction in unsprung weight is significant.

The brakes, drums and wheels are an integrated design. The aluminum drums with metallurgically-bonded steel alloy liners have diagonal fins or vanes that fit snugly into the L.D. of the original-design magnesium wheels. The cross-section of backing plate, drum and wheel is the equivalent of a single stage of a turbine; one stator and a double rotor. It is designed to pump cooling air at all speeds whereas the diagonally-vaned drum by itself will stall out as a fan above a certain speed.

The rear break design has not been settled at this writing. Two approaches are under study. The extreme shortness of the left-hand half shaft precludes the possibility of running inboard brakes at the rear and, in view of the lightness of the front brakes, similar ones may be run outboard at the rear. Also under consideration is a single water-cooled inboard disc brake running off the differential carrier. It would be on the right-hand side of the carrier, tucked in between the rear end and the back of the seat.

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were captured by two tiny 750cc Fiat-Abarth coupes, entered by Franklin D. Roosevelt, Jr. in the final event of Marlboro Raceway's '58 season. Already credited with three Italian grand touring championships and SCCA Class I production car racing acceptance, this thorough-bred blending of Fiat reliability, Abarth performance and Zagato coachwork artistry offers enthusiasts a genuine competition car without the high prices, untractability and inflated maintenance charges attached to big-bore machinery. With twin bubble, all-aluminum body. Modest price, \$3,640 p.o.e.

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Scarab F-I

(Continued from page 70)

The new car's steering gear is modified Morris Minor rack and pinion, used with success on the sports Scarabs.

The arrangement of weight masses in the chassis - engine well forward, driver almost against the rear axle, Squalo-type central fuel tanks - was arrived at in the light of calculations based on recent research by the Cornell Aeronautical laboratory. The Cornell findings make it possible to calculate the response rate of a car-driver system and, in turn, to establish realistic limits on such variables as tire slip-angle and polar moment of inertia. The new car's low polar moment will remain uniform regardless of the amount of fuel in the tanks. In the event that the Scarab's side tanks prove to be no more successful than previous attempts with this principle a tail tank will be used. But the F1 Scarab has been engineered with the side tanks in mind rather than being a conventional chassis on which side tanks have been hung.

The general form of the body, with its low nose and high tail was refined in wind tunnel tests of a scale model. Except at its upswept cowl and the headrest, it is lower than the tops of its tires. Body panels are

of .051-in. aluminum sheet.

The original plan was to have a pair of F1 Scarabs ready for the Monaco Grand Prix in May. But a rush of orders for new Offy engines swamped Meyer & Drake's plant, where most of the engine work was to have been done, and made unexpected demands on Leo Goossen's indispensable design services. The project's timetable had to be moved ahead several weeks but a team of three cars—two for racing, one reserve—is to reach Europe at the earliest possible date and is to compete in every possible Championship event.

What are the prospects? Reventlow says, "We'll probably be lucky if we finish a single race this season. But we will learn, learn a lot about our machines and about this class of racing. With luck we might even take a third place during the 1960 season. By 1961 we should be pretty experienced and our machines well refined. Perhaps by then we can begin to hope for some obvious success. It took years before Tony Vandervell won his first Champion-

ship race."

Some lint pickers in the house will note that this American grand prix contender is running some components of foreign manufacture and will object that Reventlow's effort is not a true-blue American product. In that sense, there is no grand prix car in contention in the world today that can claim that sort of total national purity. English cars used Italian carburetors, Italian cars use German gears, and so on, These are minor fragments of a much larger picture and they will be forgotten when the European band plays "The Star-Spangled Banner" and the crowd cheers.

The record must speak for itself. Meanwhile, all luck to the Scarabs.

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(Continued from page 45)

#### Deep Freeze

I did make one note, however, that now seems especially significant: "Top speed before Chicago—70; top speed Chicago-Winnipeg—65. Jiggling mixture adjustment nut helped some, not much,"

From Winnipeg, Manitoba, I drove the 370 miles to Regina, Saskatchewan, alone, while Janson Fuller returned to New York and oblivion. In Regina, as I stopped momentarily at the Post Office, a Morris Minor sedan whizzed alongside and from it emanated a British accent: "Hi! Welcome to the Canadian Wild West and let's have lunch!"

Neil Johnson, owner of Morris and accent, had been a B.M.C. agent in England, now was a strong factor in the local sports car club that boasted 55 members. It so happened that one of these 55 was a prophotographer, and when Neil heard of my photo problem he made a sympathetic phone call.

Twenty-four hours later I was on the road again. With me was photographer Dave McKenzie, 26-year-old possessor of an Austin-Healey, two cameras, a number of wins in about two dozen races, and a three-weeks vacation. Since my Alaska trip coincided with his paid vacation, he had no objection to being paid twice for the three weeks as my photographer-driver. He proved adequate at both functions, especially as driver. For the first time in a week I was able to stretch out in the back of the station wagon and sleep as we sped across the Great Plains of Canada.

Dave also taught me a thing or two about driving. His tips, plus actual experience, made a better driver out of me in three weeks than had my previous twenty years of over-the-road "Detroit-type" driving. Prior to this my only experience with a "real" automobile had been the two-year ownership of a Mark V Jag, which I had driven like a Michigan bundle-buggy. Three days with Dave Mc Kenzie and I was shifting down like a veteran of Le Mans, even slam shifting now and then for kicks (it's a cinch in the Morris, and fun!).

At the end of the three days we had reached Dawson Creek, British Columbia — and the beginning of the Alaska Highway proper. Between Edmonton, Alberta, and Dawson Creek, there is a 400-mile stretch of alleged road that is spiritually a part of the Highway since you can't get to Alaska without driving over it—or going far out of your way—and since it is even rougher than the famed "Alcan". Along much of this route paving operations are under way, and at times it is smoother and faster to go across the open plain!

The facts and figures on the Alaska Highway are almost as fascinating as driving over it, and easier on the kidneys. The original road, before civilian improvements, cost \$140,000,000. The 133 bridges and 8,000 culverts along its length if placed end to end, would reach 57 miles. No one knows — or tells — just how many men died during the construction of this road, most of them drowning in the treacherous mountain streams that held up the works every few miles. In November, when the two groups of builders, one working southward from Big Delta — the northern ter



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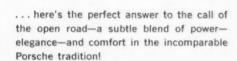
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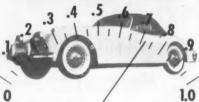
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### Deep Freeze

(Continued from page 74)

minus in Alaska – the other northward from Dawson Creek, met at a place called Soldier's Summit, at Milepost 1061, they cut a ribbon stretched across the road. It was 15 below zero yet the 250 hardened vets had reason to feel warm inside. They had opened a 1500-mile highway begun only eight months earlier – one of the greatest road-building epics since the Romans laid down the Appian Way.

Originally constructed as a lifeline to Alaska — in case the Jap subs should knock out coastal shipping — the Highway has since proved its peacetime value a thousand times over. Most of the route — 1221 miles of it—runs through Canada and is gravel surfaced. If you think this makes for a rough passage, you're right. Especially during the Spring and Fall when rain gouges out deep potholes every few yards. In the summer you have dust resembling the nightmarish stuff that bogged down the North African war, and in wintertime the road becomes a 1000-mile glacier. At all other times it is relatively passable.

The appropriation necessary for paving the entire Canadian section is sure to be forthcoming by next year, what with Statehood and all that. So that much of the flavor that makes the Alcan run exciting is soon to be lost. (What's good for General Motors — or British Motors — is good for the country, but not good for sports car enthusiasts!)

The Alaska Sports Car Club likes the road the way it is. Effervescent Polly Johnson, spark plug of the A.S.C.C. wants to stage North America's first really international European-type road race in 1959, and will do so if present plans materialize. In a manner of speaking, the first attempt at such a race has already been made, In mid-1958 two small cars, a Volvo and an MG, ran from Anchorage to Dawson Creek and return. Only the Volvo got back, thus winning by default. Surely a better planned and staged affair would draw a goodly crowd, maybe even become a yearly institution, like Le Mans. It will be interesting to see what develops in the Land of the Midnight-Road Run.

My personal race up the Alaska Highway lasted for three days, Continual driving can knock off a day (24-hour days, I mean) but I had a lot of interviewing to do en route. Here's one of my conclusions: For the all-around sportsman, I say that British Columbia, Yukon and Alaska make for the finest country anywhere. The hunting is superb, the mountain climbing ideal; winter sports are unparalleled; and as for road racing, only the sparse population and remoteness keeps this great Northwestern region from being a Mecca for the racing enthusiast. Statehood will make a big difference in this respect as more people settle along the Highway and in Alaska itself.

The highest point on the "Alcan" (no longer its official name) is about 400 miles north of Dawson Creek at 4,250 feet. You don't really cross the Rockies on this route; you sort of sneak around them. As for the temperatures encountered, they ranged from 40 above to about 25 below during the month I actually drove the far north-

ern roads – November. The extreme cold came high in the Alaska mountains in a bitter wind. The performance of the Morris at this time was not impaired. The performance of Hennesey was. The following incident may be useful for those planning a high latitude journey.

One of my many projects was to go on a caribou hunt and, if possible, kill a caribou. With a bow and arrow. Now, those of you who read the "men's" magazines know that many a deer is killed each year with bow and arrow, and all of the more dangerous game has fallen to the unerring archer. Ninety-nine percent of these kills were registered in close cover at short range. Killing a caribou in open country is another thing—especially if you happen to be a lousy shot like I am.

After I had crossed the high caribou country in the Morris with ease, Pilot-guide Eldon Brandt of Anchorage (the best in the business, by Heaven!) flew me in his little Super Cub to a mountain top in the Talkeetna range where, after stalking a herd of caribou for five hours, I got close enough to nail a buck. Sixty yards was close enough only because I couldn't get any closer—and for me that is a mighty long shot!

All right, so I had my caribou buck. My point here is not one of hunting but of weather. During this entire day-long affair, the temperature stood at minus 23 degrees. In the ten-mile wind that beset Eldon and me, it was thirty below zero by our thermometer. My clothing consisted of thin flannel shirt, a wool slipover sweater, ordinary khaki trousers, wool socks and boots - and underneath this I wore a suit of down-filled underwear. It was this that kept me comfortable throughout the hunt, plus a pair of woolen skiing gloves (can't wear mittens and handle a bow). I was comfortable, that is, until the time came to dress the caribou. Pulling off my glove from my knife-wielding hand, I tore into the carcass. Naturally, my hand

Within three minutes, my fingers were virtually frozen! The pain proved intense and I could not open my hand to release the knife. It would have been badly frost-bitten had I not jammed it under my armpit to thaw out. As for Eldon Brandt, old sourdough that he is, he just laughed and laughed. He also finished dressing out the buck!

In other words, the Alaska cold needn't bother you if you take sensible precautions: Dress in light wool backed up by downfilled underwear and don't get wet. That goes for hunters and sports car drivers.

As for driving, I'm afraid that most European small cars are inadequately equipped when it comes to keeping their passengers warm in cold climates. The heaters are generally too small even with a cold weather thermostat. Also, unless your car is in the high-price brackets, it may be subject to drafts around door and window. You can do something - not much, but something, - about this by installing extra-heavy insulation at strategic spots. The car that is warm and cozy in New York or Chicago can be an animated ice box at ten-below zero! And if you're a station wagon camper, you have to take double precautions due to the extra area to heat. There were times when, sleeping or trying to sleep - in the rear of the wagon, we were encased in an eighth-inch layer of frost on the metal work and windows, while up front the driver was more or less comfortably warm.

By the way, remember that I am discussing winter conditions on the Alaska highway. Not many people can think of good reasons to go driving in those parts between November and March; in fact, we met only one car every fifty miles or so, most of them local folk visiting their next-door neighbor. Of course, "next-door" could mean a thirty-mile drive, and if you broke down midway, it could mean a pretty uncomfortable hour or more. During a winter's night it could mean death by freezing.

One thing that that startles, even shocks, city visitors to the Far North is the friendliness of the people. It seems that the sparser the population the better are the human values. You'll discover this if, on your Alaska run, you should run into trouble. Like I did. I ran into a snow bank at forty miles per. It was around three A. M. and I fell asleep at the wheel. Why? Because I was tired - and no more

questions, please.

Anyway, had the incident occurred a half mile back on the road I would have hurtled into a thirty-foot ravine; a mile up ahead and the car would have disappeared in the waters of Teslin Lake. As it was, I awoke to find myself jammed against the wheel by virtue of Newton's Second Law, Dave sprawled in a heap beneath the dashboard, and a mountain of snow obscuring all things. Convinced that we had indeed plunged into the lake and were slowly settling to our doom in the icy waters, I clawed my way to the outside,

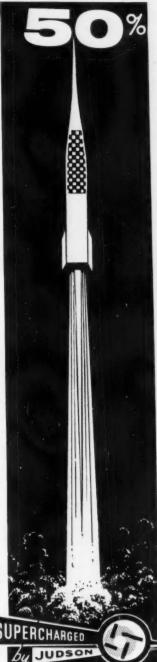
The temperature was minus five or six and we could not use the heater since a ton of snow had been jammed into and around the engine upon impact. Digging our way out was next to impossible without a bulldozer. Thereupon we wrapped ourselves in our bedding and spent a miserable four hours. Until dawn,

The very first truck that came along, a Yukon Oil Company tanker, stopped without being flagged. The driver tossed us a chain, put her in low-low-low gear and whoosh! - we emerged from that snowdrift like something out of Cape Canaveral. Object lesson: don't fall asleep at the wheel on the Alaska Highway unless you're very tired and are surrounded by four-foot snowbanks.

But from British Columbia to Alaska, if you so much as turn off the road to examine a soft tire, the guy behind you will most likely pull alongside and make sure you're okay. You can get to like a country – and people – like this.

I liked Anchorage. And so will you unless you happen to be a bluenose type who thinks all the world should punch a metal time clock and report its daily activities to the D. A. R. For Anchorage is composed of 60,000 individualists who migrated - or were born - there because they - or their fathers - thought that here is still room in the world for people who like to act, and especially think, as hey damn well please, while conforming o the letter and spirit of all the laws of God and man. Amen.

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#### Deep Freeze

(Continued from page 76)

he'll look up your police record. Scratch an Alaskan and he'll punch you in the mouth. Bearing this in mind, you can see why they're going to have one heck of a sports car fraternity up there once things get moving. Because of the very nature of the participants, events in Alaska will have an extra measure of excitement. This was hinted at in Anchorage when I contacted Polly Johnson and told her I wanted a picture of her Alaska Sports Car Club for SCI. "Sure, c'mon over," she invited,
"-I'll send a guide for you!" (All of Polly's statements end in exclamation points.)

I needed the guide. Polly's home and incidental H.Q. for the A.S.C.C. is a half dozen miles out of Anchorage on the shore of Sand Lake-wherever that is! The guide got us there okay and we found about twenty cars lined up on the thick ice of the lake, drivers at attention beside them. It was quite touching. But no sooner had our shutter clicked than the drivers leaped into their machines and with the familiar roar, an impromptu race around the lake shore-on the ice-took place. This was something new for me, so I joined them in the Morris. Fun? Man, you have no idea how wonderful it is to zoom at sixty across a lakeful of ice, turn as you near the rock-rimmed shore-only to find that your wheels alone turn, but you don't! But then the half inch of packed snow furnishes just enough traction for your tires and you edge around somehow -to do the same thing across the lake, until eventually you get on to it and find yourself able to duplicate the hi-jinks of these smart-alec little sports cars, and finally you get too close to the lake center and a loud long c-c-r-rack! sounds above the motor's roar and follows you back to home base where you gallop up onto the shore and they tell you that the ice cracks all the time and is quite safe so long as you keep moving.

You keep moving. Up to the house and a cup of coffee in front of the fireplace.

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After two weeks in Anchorage and environs, I was ready-obliged, rather-to return home. The long way. My route: south to San Francisco, then across country to New York. It was to be a 7,000mile journey in all, visiting B.M.C. dealers en route. Dave McKenzie had to fly home to Regina before I left Anchorage; however, I had all the still photos I needed. On the way back I would need someone to handle the Bolex, since I was committed to a couple of TV commercials. Here again I encountered photographer trouble. The fellow I finally hired-the only one in Anchorage who could find time to go along-could drive rather well. but he and a 16 mm. camera proved to be utter strangers, a fact I discovered well after we started back. I could never understand why, although I get along really well with paleontologists, machine gunners, obstetricians and criminologists, I always have trouble with photographer ... So I took my own damned movie

Before leaving Anchorage the car wa checked by the new B.M.C. dealer there Bill Woodward, and his staff. They found that the rough treatment I had given the Morris resulted in the need for a new set of plugs. "You're collecting carbon like an anthracite miner," said Bill. "Whatever you're doing wrong, you'd better stop!"

I told him I was burning "regular" gas for the first half of the trip, I would continue to do so until San Francisco, then would switch to high test.

Woodward shook his head, muttering, "If regular gas is doing this to your engine, you'd better not wait till Frisco."

Calling him a calamity howler, I bid Bill and Anchorage farewell and headed back down the Highway. Inside of 300 miles I knew something was radically wrong with the Morris, It was obviously running on no more than two or three cylinders and had about as much pep as an 85-year-old nudist. When the trouble began, soon after departing Anchorage, I'd thought it was condensation in the gas line. By the time I realized the truth it was too late to turn back.

We barely made Whitehorse, capitol of the Yukon Territory. There we met the best service department in the entire 12,000 miles-and the smallest. Jack Mutch and Pierre Gaudard, a Scot and a Frenchman, respectively, with close to a century of mechanical experience between them, ripped the tiny engine apart and went over it with a variety of unearthly instruments that included a stethoscope. "Look," they said at length, and showed me where a defective plug installed in Anchorage, through no fault of the installer, had burned and dropped its electrode into piston number two, bending and rendering useless the valve.

I remained in Whitehorse overnight while the boys unbent the valve. The Morris sounded like her old self again when we resumed the voyage, while the parting words of Jack Mutch rang in my ears, "Ye'd best switch to Ethyl gas, laddie, what with a' the carbon yer gettin."

On the return trip, as on the outbound leg, I maltreated the little station wagon something awful. Since Dunlop Tires was one of our co-sponsors, I rammed the car into potholes indiscriminately, and skidded across snowless stretches unmercifully. The more my driving improved, the better workout I gave the car. That the transmission held up at all is a solid testimonial to British workmanship and ingenuity. Now I understand why they won the Battle for Britain back in 1940—the front line of defense was manned by BMC mechanics!

. In Seattle, after six days out of Anchorage, my fourth and final photographer left me to return home the easy way. I was photographer-less, and happy, for the rest of the way to New York. Since I was also driver-less, I did the final 4,285 miles alone, sleeping mostly in the car when exhausted, and losing 12 pounds.

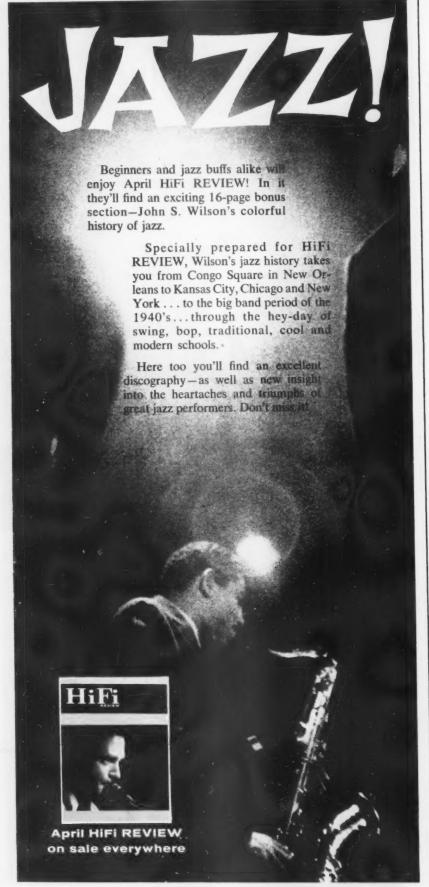
It was in Nevada, somewhere east of Reno, that I was shot at, twice—and hit. Crossing the desert on Route 40, I spotted buzzards circling about a mile off the road. Since it was open range country, I turned off to investigate. I reached the vultures but before I could inquire into their deviltry, there came an explosion from up front. Certain that I had thrown a rod or run over a land mine, I halted, got out



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#### DEEP FREEZE

(Continued from page 79)

and-whang!-there sounded another explosion. This one came from the door, no more than a foot from my hand, and it gouged an inch-long dent in the metal. The bullet-for such it was-richocheted off and spanged away across the desert. On the fender I saw where the first had landed.

The only cover was a hill about 400 yards away, which meant that my unseen assailant was either a mighty good shot, or was firing magnetic bullets. I gave the circling buzzards a last look, and all sorts of wild west storybook plots entered my mind. But before a third bullet did likewise, I high-tailed it out of there. I have no objection to being a hero-but I want to do it where some poor underpaid reporter can write a story about it!

Needless to say, I escaped with my life. In St. Louis, a couple of days later, the long-coming climax of this journal was reached. Nothing dramatic, mind you, just a plain routine climax. What I thought would be a plain routine check-up at Continental Cars Distributors turned into a "quick valve job". It seemed that the well-meaning Chicago lads who installed that lean needle in the carburetor had caused the car to run too lean for 10,000 miles, much of it on regular gasoline. This had resulted in a loss of three-to-five miles per gallon and a resounding lack of performance. Frankly, I had thought that the little vehicle had performed right well all this time.

But from St. Louis, on to the end of the trip, I learned differently. That wagon leaped forward like a thing possessed, as though to make up for lost time! The 800 pounds of luggage and flesh it contained was as nothing now; I realized that I had missed out on a good deal of driving pleasure.

The final figures for the entire run, in view of the unfortunate circumstances, require qualification out of fairness to the car. Here they are:

Distance: 12,085 miles. Average speed: 45 mph. Mileage: 36 mpg.

Flats: 4, largely due to faulty mounting. 1 puncture.

Gas consumption: 348 gals. at 35¢ gal. Elapsed driving time: 268 hrs.

The mileage was, after all, under winter conditions in a car loaded with nearly a half ton cargo, including passengers, and impeded by that needle that had no business being in the carburetor! Significantly enough, the Morris averaged a full 40 miles per gallon between New York and Chicago outbound, and since the valve job, a trifle under-on high test gasoline.

My recommendations to the manufacturer: For really sub-zero temperatures, a huskier heater is desirable, plus better insulation of doors (this goes for all small cars in the low-price bracket). An improved latch for the hood (okay, bonnet) And a tougher covering for the deck; metal objects tear the present fabric under rugged conditions. Insofar as comfort is concerned: he who expects Cadillac specifications in his family auto will be disappointed in one costing a fourth as much. Still, I managed to drive from 400 to 700 miles a day without undue fatigue. In fact, having driven the same distance in cars of the Cadillac class, I venture to say that I was less tired in the Morris, simply because the "cradle" effect of the Detroit battleships is conducive to sleep. You have to drive these little foreign buggies—it keeps you alert.

I suppose there are numerous statistical elements to the Alaska junket that might interest sports car fans; however, my purpose – and that of Hambro – was not so much to compile a record of dry figures, but rather to show that it can be profitable, speedy, safe, more or less comfortable, and fun to make such a long trip in a car of less than a ton heft; and that, in addition to the above considerations, the Morris Traveler, or station wagon, is especially ideal for the sportsman-tourist.

Question: Would I drive a similar car

to Alaska again, strictly on my own?
Answer: Indeed, yes. I would ride a
llama there if it was the only way I could
get back to Alaska! I hope, in this article,
I've managed to give you some idea why.

### First Rally

Continued from page 47)

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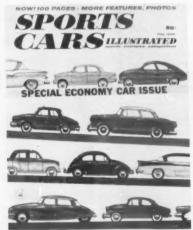
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(Continued from page 55)

Souping Small Ones

and lift diagram to take advantage of the momentum of the fuel-air charge to pack the cylinder at high engine speeds; and (5) raising the compression ratio. All of these tricks are very effective on most small economy car engines.

In the case of increasing piston dis-placement, any engine with a regular cast iron block (no sleeves or separate cylinder barrels) can be overbored .070 to .125 of an inch and fitted with special pistons from the equipment supply houses. (Don't forget, too, that the big U.S. piston specialty companies like Jahns, J. E., Merryman, etc., can supply for the small foreign cars.) You can kill two birds with one piston here by getting domed tops that extend up into the combustion chamber and increase the compression ratio. This is the best hop-up procedure of all because you raise the low-end torque as well the top-end horsepower. And if you want to go on to the expense of a special long-stroke crankshaft you can really get a wallop. These are available for a few of the more popular models (VW, Fiat, etc.), and any of the California crank companies will stroke your shaft for \$100 or so. (Keep in mind that you need special pistons with a short pin-to-crown height when you increase stroke.) With costs running between \$10 and \$15 per cylinder for big-bore domed pistons and matched rings and pins, the 'stroker" kits may not get much attention from the economy car people!

The subject of breathing falls in a little different light than on our Detroit V-8's. Late U.S. engines feature very free breathing at all points in the induction and exhaust tracks-whereas breathing is purposely choked on many small foreign engines to reduce fuel consumption. (Other factors equal, fuel consumption can be reduced by increasing the gas velocity through venturis, ports and valves to improve fuel atomization and mixture distribution. At the same time the higher velocity means more breathing restriction at full throttle.) Probably the VW engine, with its tiny manifold passages, ports and valves, is the prime example of this thinking. So look for engines with low HP outputs per cubic inch; this is a clue that breathing is limited-and you can expect minor breathing improvements to give a relatively big boost in HP, much more than you're used to on American

Unfortunately the improvements won't be cheap. Once more we have to pay the price of engineering compromises aimed at the high cost of gasoline in Europe. In many cases decent breathing will only come with a complete new cylinder head with bigger ports and valves. Examples are the Okrasa heads for the VW, the Stanguellini and Abarth heads for Fiats, the Raymond Mays heads for English Ford engines, the Derrington head for the B.M.C. B-type engine, etc. These special heads really do a job, but generally cost \$150 and up. If you can't go this deep you can add dual carburetion, port out your, stock heads with a grinder, and maybe even fit oversize valves if you have the facilities and know-how. It all helps.



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### HOTFOOT CONSUL.

(Continued from page 58)

None of these gave power or torque to equal the present layout, the virtue of which is claimed to lie in its unusual manifold labyrinth. At the center of the system, flanged on its sloping upper face to take the carburetor, is a chamber from which one pair of directly opposed pipes feed cylinders 1 and 4, and another pair, offset from the first, serve 2 and 3.

As can probably be visualised, a limited degree of all-around interconnection is maintained. For hotspotting, the base of the central chamber is extended below the plane of the nether intake pipe (cyls 2 and 3) and this makes direct contact with the exhaust flanges for these cylinders. The whole works is a one-piece aluminum casting.

The exhaust system consists of four flowingly curved downpipes attached directly to the ports and converging into a single pipe of larger bore alongside the crankcase. Final exit is through the standard Consul silencer. At moderate to medium revs and throttle openings the note is louder than standard to the extent that you don't notice any power roar from the unsilenced carb intake (the kit includes a tastefully bellmouthed kisser for the SU, in polished aluminum). Further up the scale the exhaust takes on more of an edge but isn't ever really noisy.

"90 BHP . . . 90 MPH", fanfare the Rubery Owen leaflet. Realistic investigation usually shows that figures as round and coincident as this have been approximated upwards. But in the present case we have already unmasked the speed claim as a downhill approximation (albeit an unintentional one, no doubt), and it looks as though the same goes for the power figure, even though it already represents an almost unprecedented proportional advance over the stock engine, namely, 52.5 percent.

The explanation here is that the handbill was based on bench tests of the prototype, whose head was delivered into the world by the rather al fresco midwifery described earlier. No subsequent conversion, incorporating the altered port angle and sundry lesser fruits of experience, has been bench tested, and the indications are — vide the century maximum we recorded — that the 90 horse mark is now being exceeded. This output was dialled at 5,500 rpm, compared with the forty-four hundred whereat the stock engine produces its 59 bhp. Piston speed at 5,500 revs is 2870 fpm.

Top gear on the Consul gives 16.6 mph per thousand rpm, so 5500 revs in high represents 91.3 mph. This would lead you to expect protests of pain in the overpeak



region of the middle and upper nineties, but either they aren't made or Dagenham have done a good gagging and insulating job. Of course, you wouldn't normally hold much above eighty-five for prolonged periods — Berthon told us he cruised at an indicated 85/87 all day during recent travels on German autobahnen and French Routes Nationales; but it's nonetheless reassuring that speeds close to maximum can, if you're in enough of a hurry, be maintained without audible pleas to desist.

Borg Warner overdrive is an optional extra on all English Fords above the Prefect-Anglia level, but this converted Consul, unlike, for example, the Mk. 1 Zephyr of recent memory, isn't a car that sets your fingers itching for a higher-thanhigh ratio as a means of abating buzz. On the other hand, it suffers from the rather wide gap between second and top (2.64 ratios) that is the normal penalty of a three-speed box. And the fault is felt the more, rather than less, on the converted version, insofar as the extra liveliness constitutes a constant temptation to make amusing music with the gear stick and throttle.

A further criticism is that the shift showed a marked reluctance to come out of bottom gear notch, to the detriment of all of our acceleration times except zero to 30 mph, which didn't entail a change out of bottom. We hadn't noticed this failing on the several stock Consuls we have driven, so it may just have been a matter of maladjustment with Rubery Owen's car.

Test reporting conversions of this kind for SCI, we catch ourself out in a repitition of words to the effect that these kits, apart from usually increasing exhaust noise and gas consumption to a variable extent, positively do not have other drawbacks to offset the gain in performance. We must just hope serialisation doesn't rob this claim of credibility, because it's true; never truer, in fact, than in the case of the R.M.-Consul, a car that is certainly not inferior to standard in starting and idling, and surpasses the stock Ford in smoothness and pulling power at low to medium turnover.

Workmanship and finish on these kits is of a high order, and Rubery Owen show a proper concern that conversions consigned overseas should reach their destinations in good shape and present the minimum of fitting snags: packaging for shipment is standardised and sightly and each conversion is accompanied by a fully detailed parts list, a perspective drawing of the Consul engine with the Mays bits in levitational suspension, and installing instruc-

tions. In Britain you can fairly gauge a conversion specialist's rating by the sort of recognition he receives from the makers of the cars he treats; and by this criterion, R.O. are well up the respectability ladder—orders placed with Ford of Dagenham for competition conversions have in a number of cases been unsolicitedly farmed out to Rubery Owen, Also, police departments in certain cities have bought Mays packs for their Zephyrs.

Griff Borgeson, in SCP's 1957 test report on the Zephyr, gave practically unqualified praise to all aspects of the car's handling and habitability, and in our book the same goes for the Consul. The general behaviour of the two models is of course almost identical, the differences between them being limited to weight and length; the Consul sedan, at 2504 pounds dry, is about 240 pounds lighter than the corresponding Zephyr, 2½ ins down on wheelbase, and 6½ ins shorter overall. The treads are the same, in common with the body heights and widths.

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The Consul, like the Zephyr, has an understeering tendency that is invertedly proportional to speed - the faster you corner it the less it's manifest. Considering the height and relative heaviness of the body, cornering roll was very slight on the converted car, no doubt because it was fitted with the extra hard rear shocks Rubery Owen offer as an optional appendix to the kit. The other item in this category - also present on the test car - is a set of hard brake linings, Ferodo's grade AM2. These don't have more than a fractionally adverse effect on brake responsiveness and sensitivity and are strongly resistant to fade.

Although this Consul from Dagenham, with about six inches more top-hamper than its Dearborn cousins, may look taller than the Taj Mahal to American eyes, we concur in Borgeson's comment, apropos the similarly lofty Zephyr, that "it welcomes its occupants instead of challenging them". Something to be said, perhaps, for not having to strike baboon attitudes when entering or alighting from an automobile.

The Engine Development Division of Rubery Owen and Co. Ltd., Bourne, Lincolnshire, England, ship these Consul conversions directly to U.S. customers. Write to this address if you're interested. Basic price of the pack, exclusive of shipping and other charges, is around \$225.00. The special shocks, which personally we wouldn't be without on a Consul with the performance the Raymond Mays stuff gives it, cost approximately \$25.00 per pair,

-Dennis May

### Souping Small Ones

(Continued from page 83)

And don't forget the exhaust. Some of the foreign car equipment companies (Abarth, Ferry, Stanguellini, Mays, etc.) can supply free-flow exhaust "headers" that help a lot. And, of course, Abarth supplies complete dual exhaust systems for several popular models. This is an easy way to pick up 5 or 10 percent in peak hp with bolt-on equipment.

Supercharging has always been one of the most effective road hop-up methods

for any kind of car, especially if it is of a type that gives some boost pressure at low rpm. These small low-breathing foreign engines respond the best of all because all breathing losses upstream of the intake valve head are cancelled. Where a 6-lbs./sq.in. manifold boost pressure might raise the peak power of a Detroit engine by 30 percent, you can figure on a 50 percent boost on a VW or Renault. Admittedly the practice of supercharging in general has never had a good reputation for reliability in this country . . . mostly, I think, because of ill-engineered efforts to apply it to big, free-breathing engines. Invariably the blower drive systems were not up to the speeds and hp involved. You don't have these problems when supercharging engines of less than 150 cu.in. I believe most of the c nercial blower kits now on the market for small foreign engines are as reliable and long-lasting as any of the other special hop-up equipment like pistons and cams. And prices are not out of reason; Judson kit prices start at \$144. Supercharging looks real good for small cars from where

And there's the old camshaft. We've learned to expect miracles from minor cam changes-I expect partly because of some of the wilder advertising claims we read all the time. Actually your potential peak power increase with hotter cam lift and timing depends entirely on how hot the original timing is. Cam changes are generally profitable on small economy cars. But keep in mind always that you only rob Peter to pay Paul here; timing changes to help the high end generally cut the low-end torque. If you try to get around this by using short valve-open durations, and then open and close the valves faster, your rubbing loads between cam lobes and lifters shoot up-and you can wear out these parts in a hurry. You have to compromise here. And one other thing: It's easy to "overcam" your engine. Many small car engines have neither the top-end breathing or the lower-end rigidity to use crank speeds of 6000 rpm and more . . . so what's the use of having a cam that "comes in" at 4000? You might better have a cooler cam that gives something at the low end and then limit maximum rpm to 4500-5000. (This is very necessary on the VW.) If you do cam for

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(Continued on page 93)

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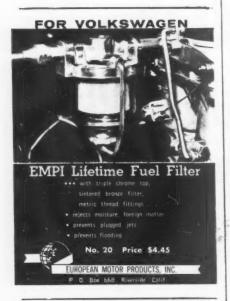
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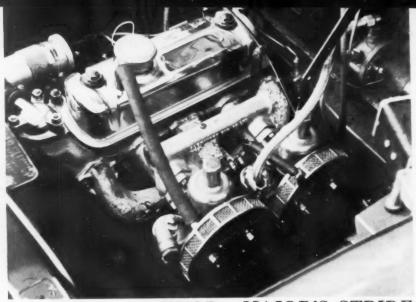
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Continued from page 57) MINOR - MAJOR'S STRIDE.

For readers who aren't familiar with Minor statistics, the fact that a driver and front seat passenger of average height could comfortably wear a shako in this car has an indirect relevance to the widely differing maximum speeds obtainable on the 4.55 and 4.2 axle ratios. To take yet another comparison, the tiny Morris, with its 86 inch wheelbase, is over six inches loftier than a Plymouth Fury, with 118 inches between hubs. Shako wearers contentedly motoring a private stratosphere around with them may see nothing anachronistic in all that headroom; but most 1000 owners and prospects will welcome the day - now presumably not far distant - when the Minor blueprint is radically reproportioned, to the benefit of speed and economy both.

Apropos economy of operation, it is to be noted that our overall gas consumption figure of 31-miles per U.S. gallon (which included all timed tests except the standing quarters) was slightly better than SCI's hard-driving mark last year with the regular Minor. So here's a further argument, from the average owner's standpoint, in favor of the high axle ratio, because the dual carb car would surely consume more fuel per mile than its stock counterpart if both were geared alike. Miles per hour per thousand rpm in top are 15.2 and 16.44 for the low and high ratios respectively.

All the accelerations from zero to stepped speeds showed Mr. Christie's Morris in a strongly favorable light, vis-å-vis the standard car, sample time savings being 2.5 seconds to 40 mph, 3.6 to 50, 3.2 to 60. Admittedly, these through-the-box stampedes are, due to the variable human factor, a somewhat inexact branch of science, our own method — which anyway has the merit of consistency — being to stand on everything except ceremony and stay standing even during actual shifts.

Talking of transmission, the Minor gearbox and its proverbially light acting shift mechanism have of course been praised almost ad nauseam. On the test car, however, Alexander had successfully gilded the lily by extending the lever by about three inches and putting a double crank in it, the angles being such as to make the upper shank parallel with the lower. Altered this way, the thing almost

came up and shook you by the hand. They don't sell a customised stick to this pattern but it's worth mentioning as the sort of detail mod any owner could carry out for himself. Certainly it much enhances the handiness of an inherently delightful shift.

Now let's see where Alexander goes to find 27 percent more power and 121/2 percent more torque. The cylinder head is planed to raise the compression ratio from 8.3 to 8.9/1. The combustion spaces and ports are polished and reshaped. A special inlet manifold carrying dual horizontal 11/8-inch SU carbs is fitted in place of a single SU, the conversion including individual nonrestrictive air filters of muffin type. Beefier valve springs, one-third stronger than standard, are supplied. On the exit side, the siamesed center port is machined off the exhaust manifold and a full-flow adaptor bolted in its place; this feature, which, as mentioned earlier, is listed as a separate item, is only claimed to be worth approximately one bhp, making it roughly equal in value to the various twin pipe and silencer systems Alexander have experimented with. If this is so, we'll take the modified manifold, on account of it adds nothing to weight or tumult and costs little, whereas twin pipe systems tend to be heavy, expensive and relatively noisy.

Standing at the kerb and listening to the converted Minor at work, even buzzing over fast in fine pitch, you can't tell it from a standard one. From the interior of the car, on the other hand, the dual carbs with their openwork cleaners are expectedly rather more audible than the single carb setup, particularly on full throttle at rpm around the torque peak.

The engine was an unfailing first-time starter, even after long outdoor stands in freezing weather, and idled purringly at what we would judge to be around 600 rpm; revs had to be gauged by ear, for although a tachometer was one of three extra instruments Alexander had added to the test car, it didn't work. The other two were an oil pressure gauge, which showed 45 psi at 65 to 70 mph, and a water thermometer. In the cold weather prevailing it was hard to needle the latter past 140 deg. F, which was probably too cool for optimum fuel economy and power too.

Alexander retain normal Morris valves but fit harder plugs - Champion N5. These showed no trace of running on after switching off following maximum speed and acceleration runs. Although the chromium plated rockerbox cover seen in our photos is an extra, these pictures don't in general belie the extreme neatness and good finish of the Haddenhamware. In fact, we don't know of any British conversion pack that excels this one (few even equal it) for tidiness and nice workmanship.

With the regular Minor, all under-hood maintenance operations are as easy as eating peas off a ladle, thanks to generous space surrounding the engine, and the Alexander stuff detracts nothing, net, from this exemplary standard of accessibility. Only the dipstick is a bit buried, but that isn't affected one way or the other by the conversion.

Backtracking to aspects of performance, it may be wondered how the alternative axle ratios compare on through-the-box acceleration from a standstill. Although we didn't have an opportunity of trying, say, a standing quarter mile or zero to sixty on the stock (4.55/1) gearing, our guess is that with not more than two people aboard, the car would be slower through these ranges on this ratio. As tested, with around 300 pounds of humanity inside, the Minor would spin its wheels for a few vards on dry concrete or tarmac on takeoff. pulling the 4.2 axle. Under these conditions there was a slight tendency to axle tramp, which would probably have been aggravated by a lower gear.

The Minor, renowned these ten years as perhaps the world's best handling and roadholding small car, can easily take an extra 10 mph without needing any new aids to roadability. Brakes on the test car were nonstandard in one respect, though, in pursuance of some Alexander experiments that aren't likely to have a commercial outcome; no purpose was therefore to be served by putting these brakes through our normal ten-stop toasting. SCPs report on the stock model, it may be recalled, assessed the 7-inch Lockheeds as 'more than equal" to their job, adding that "though some fade was noted, recovery was excellent". Recorded efficiencies during the ten-stop drill started at 62 percent and subsided to 48 percent, with however a 55 percent reading as late as the ninth application from 60 mph.

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The same test report applauded the Minor as "an almost ideal traffic vehicle", and our only reservation would be to put almost in italics. Its one fault under this heading, for our money, is the invisibility of the opposite-side front fender from the driving seat, which is by no means conducive to hairsbreadth parking accuracy at the kerb. Fortunately you can see the thing if you wriggle up into an attitude halfway between sitting and standing, a manoeuver that could still be accomplished in comfort while wearing a shako, Also, like most other British cars, small and large, the Minor suffers from windshield pillars that are too thick and too far forward. On the credit side, though (which is the crowded side of the ledger) the relative placings of the brakes and accelerator pedals are purely ideal for heel and toe operation when using the gearbox as an aid to retardation.

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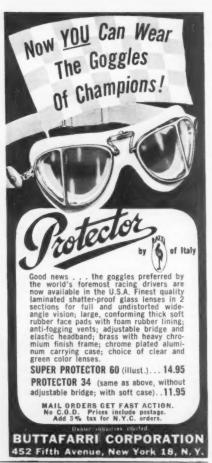
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### Dauphine

(Continued from page 58)

haven't had a tuned Dauphine engine on the brake. Thirty gross bhp at 4250 rpm is claimed for the cooking edition and it would be reasonable to suppose the Haddenham medicine ups this by about 15 percent. Incidentally, the car we borrowed had just returned from a hard driven 2000-mile continental tour in the hands of one of the firm's directors, without a spanner being laid on it either during or after this trip.

It's a good thing the Dauphine's willing performance and happy handling form a constant inducement to keep your throttle foot on the floorboards because the elevation of the accelerator pad, and the path of its initial travel, call for a knack that our smallish hoof didn't easily acquire. In fact, it didn't acquire it at all. This is a fault common to the standard and converted types both, though on Alexander's own admission it is for some reason more marked with the linkages they employ for their twin SUs. It has nothing to do with the pronounced bulge of the wheel arch alongside the driver's foot; in practice, due to the compensatory absence of a transmission hump in the middle of the car, the lateral bulge isn't bothersome.

With or without the extra power bestowed by conversion-and in a way, more especially with it- a three-speed transmission inevitably spells frustration when handling any car of less than a liter displacement. The second-to-top gap, at 3.2 ratios, isn't too bad, but an 8.31 hiatus from first to second means you either have to exercise conscious restraint during shifts or give the clutch some pretty drastic heat treatment (not that it seemed to mind). This wide spacing is reflected in our unexciting 0 to 30 time of 6.8 seconds; 30 is the top of the speed range in fine pitch (16.19/1), and when timing the car from a standstill to this speed you find yourself reluctantly holding onto bottom cog at fairly excruciating rpm because you know you can't afford the more humane course of upshifting at around 25. The clutch action is sweet and positive in takeup, but on the test car, a current model with 8400 miles on it, there was some lost motion in the shift mechanism. The lever itself could do with being a couple of inches

None of these remarks, of course, implies criticism of the Alexander package per se, the merit of which is perhaps best demonstrated by comparing times over the 30-to-50 and 40-to-60 bands in top gear by converted and unconverted Dauphines.

Here are the figures:-

30-to-50: Stock, 16.5 secs.; Alexander, 14.5. 40-to-60: Stock, 28.8 secs.; Alexander, 20.0. Unlike several British and continental small cars, this French tadpole doesn't err on the side of overgearing in direct drive. At 4.68/1, giving 14.9 mph per thousand revs, it feels exactly right flat out on the level in still air.

With its swing-axle independent rear suspension and heavily stern-biased weight distribution (39.2 percent front and 60.8 back, unladen) the Dauphine could be expected to oversteer much more than it does. In fact, the oversteering tendency with either one or two occupants didn't at any time disconcert us, though sensitivity to side winds, a familiar Dauphine characteristic, seemed to increase in direct ratio to speed; on full noise in strongish cross gusts, our course certainly didn't much resemble the shortest distance between two points.

Alexander don't undertake any modifications to the running gear to help acclimatize the car to the above-standard chevauxvapeur they sell, but for a reasonably prudent and experienced driver we wouldn't say the omission mattered. K. N. Rudd Engineers, on the other hand, seek to neutralise oversteer and enhance directional stability by shortening and altering the periodicity of the rear springs, which reduces the height of the car. Oversea prospects, of course, can't take direct advantage of this Rudd service, which are mentioned by way of a hint to U. S. owners with the facilities and know-how to experiment on similar lines. Reworked the Rudd way, the already comely Dauphine enters the junior cheesecake class.

At 41/2 turns from lock to lock, the Dauphine steering is lower geared than seems necessary on so light a car with such a small proportion of its weight on the front wheels. But the resulting "slowness" didn't prevent MM. Monraisse and Feret bringing off their triumph of nerve over neige in Le Rallye, did it? The prodigious steering lock and the centering springs to aid castor action are much appreciated

when negotiating tight turns.

The brakes on the car tested, although spared the ten-stops-from-sixty treatment that SCI's full roadtests include, proved adequate for all contingencies in terrain that admittedly wasn't particularly rigorous. They confirmed our earlier test report's finding that any fade that could be provoked was subject to quick and thorough recovery.

Price of the complete Alexander conversion, exclusive of shipping charges and import duty, works out to approximately \$180.00. Basic cost of the alternative deal, leaving out the cylinder head treatment and special valve springs and plugs, is

around \$120.00.

The Dauphine's development potential seems to be practically limitless, witness the awe-inspiring performance of the drastically tuned sample on which Paul Frere averaged nearly 72 mph in the 1957 Mille Miglia, missing victory in the 1000 cc class (GT category) by three seconds. This car, like the Monte Carlo Rally winner, was modified according to Renault's own gospel, rather than Gordini's. Specification included a light alloy head with oversize valves and ports, dual-choke Solex carburetor, special con rods, convex pistons raising the compression ratio to 8.2/1, high-lift camshaft and big capacity sump. Treated this way, the engine gave well over 50 horses at 6000 rpm. Not content with the four speeds Gordini uses, Renault had a five-speed box, devoid of synchio-

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(Continued from page 65)

#### H-Bomb

As an illustration of what sort of an honor it was considered to drive for Austin, it's worth mentioning that when Sir Herbert enlisted the services of Driscoll there was simply no question of his being paid. All that happened in the early stages of the association was that Austin insured him while racing. Later, at haphazard and unpredictable intervals, he'd send Pat quite a modest check. Later again he was put on a seasonal retainer - of a value that would make a modern driver of Driscoll's superb caliber laugh in the face of any sponsor who had the nerve to offer it. Driscoll didn't laugh, though. He was a proud man to even get the appointment, and the fact that they paid him as well made it all seem like something out of a fairytale. Finally, in 1936, he suffered severe injuries in a hillclimb crash at the wheel of a twin-cam, and never was able to race again.

Perhaps the most interesting of the pre-Jamieson racing Sevens was the type known as the Dutch Clog, introduced in 1931 and featuring offset transmission with the driver sitting alongside the shaft, 31/2 in. from the ground. This layout was, I think, copied from Duesenberg. All previous supercharged Sevens had horizontal blowers but this one's was vertical at the front of the engine, generating a maximum of 15 psi. The name Dutch Clog was of course an allusion to the body shape, but it was a declogged and strikingly streamlined version that, on August 8th, 1931. beat a century for the kilometer and mile for the first time in Class H history, driven by Leon Cushman. His speeds, for the record, were 102.28 and 100.67 mph over the kilometer and mile respectively. To be fair to MG, though, it should be understood that a Midget had been the first seven-fifty to actually reach three figures officially; earlier in '31, George Eyston had turned 103.13 on the historic EX120 at Montlhery, but over a distance of five kilometers. One mile and kilometer attempts, which the international rules required to be timed two ways, weren't possible at Montlhéry, which left these plums on the tree for Austin to pick at Brooklands.

Of the several distinctions possessed by the Dutch Clogs, not all were honorable. They were, for instance, probably the most uncomfortable racing cars ever built. Driscoll, who had graduated from the spartan school of motorcycle racing to the Austin team, quickly discovered his mistake in imagining he was in for a softer ride than he'd been used to. After developing bruises of every color in the spectrum during training for the 1931 Brooklands 500, he took unique self-protection measures for the race itself. Under the white overalls prescribed by Austin's standing orders he wore a full suit of motorcycle racing leathers. Under these again, from his shoulder blades to his fanny, his back was heavily padded with cottonwool. The trailing edge of his gravity fuel tank, which had threatened to amputate his legs at the knees, he insulated liberally with sponge rubber. Finally, resorting to a practice that had no precedent at Brooklands.

(Continued on page 90)

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### H-Bomb

(Continued from page 89)

he strapped himself to his seat to make sure he and the Seven followed approximately the same trajectory over the track's notorious Big Bump.

Considering the consistency and quality of the successes gained by Austin in all forms of speedwork, it maybe seems unkind - but is nevertheless necesary for the sake of historical truth - to add that the development of the racing Sevens in the late 20's and early 30's was often a rather haphazard and irrational process. Basically the car was a little beaut, but all the time it seemed too many cooks were hard at work ungilding the lily. There was little cohesion or logical progression in such matters as body design, the principle being to try any damn thing once. When one of the contemporary land speed record cars came up with streamlined pontoons between the front and rear wheels, the Seven of the day promptly sprouted similar slabs. When Malcolm Campbell's current Bluebird appeared with its radiator in a state of outrigged divorcement from the hood (the one really bad aerodynamic feature of the design), Austin emulated this too.

Clever and diligent in finding the speed and reliability they wanted, the Long-bridge faculty seemed to lose interest when it came to such incidental matters as making the cars habitable. That knife-edged fuel tank was a typical instance. Another was a battery mounting bracket that lacerated the back of the driver's hand every time he changed gear.

Even in an aesthetic matter like the color of the paint jobs, they had trouble making up their minds. Up to about 1932 the racing Sevens were sprayed a distinctive but rather hideous orange. Then Sir Herbert's daughter — Mrs. Arthur Waite — thought jade would be nice, so they made it jade. Then, for about two and a half seasons, just long enough for it to acquire badge status, white was adopted. Finally, for part of 1936 et seq, the little screamers put on a national costume of British racing green.

In crediting Herbert Austin (who was knighted and elevated to the peerage by turns) with the initiative in developing a brilliant racing car out of the original Seven, which went about as fast as you could push a wheelbarrow, we have told the truth but not the whole truth. More accurately, this was a combined operation, in which Austin and the energetic Waite played complementary roles. It seems probable, in fact, that it was Waite who actually suggested getting into racing, though mere wishfulness would naturally have got him nowhere if the old man himself an erstwhile racing driver and a survivor of the gory 1903 Paris-Madrid hadn't concurred and cooperated.

To Captain Waite, too, belongs the kudos for one of the first, if not the first, race successes ever copped by the Seven. In May of 1923 he drove the winning Austin in the Italian Cyclecar GP at Monza (not that the Seven, strictly speaking, was a cyclecar). The same year, in the absence of a separate 750-cc class in the Brooklands 200, E.C. Gordon England gamely pitted

a warmed up Seven against the elevenhundreds. It placed second at 76.84 mph, splitting the Salmson opposition and prompting these panegyrics from the Motor: "All previous French ideas as to the invincible qualities of their cyclecars and light cars have been upset by the incredible performance of these tiny machines".

The following year's 200 did have a separate seven-fifty school and Gordon England won it, a slight reduction in his overall speed being accounted for by the fact that he'd done the final six laps with one piston and conrod reposing in the oil pan. Thereafter, Austin never lost a 200, England personally winning three years in a row. In his capacity as a specialist body builder, Gordon England fathered one of the most favored types of sports Seven, which became so thick on the concrete that in 1925 the resident Brooklands club staged a race exclusively for them.

By the middle of 1927, thanks to the endeavors of such men as Waite, England, Chase and Boyd-Carpenter, Sevens held every last Class H record except one — the 24 hours, which was Peugeot's property. It wasn't that Austin lacked what it would take to strip Peugeot of this solitary solace — they simply hadn't got around to trying. When they did, late in '27, they jacked the 24 hours speed from 40.86 to 65.98 mph, one of the biggest beatings in international record history.

"I am not in favor of building racing cars merely for speed", declared Sir Herbert Austin in 1930, "but I do know from thirty years experience that events lasting between 250 and 500 miles teach lessons . that cannot be learned any other way in such a short time". Within a month of this utterance, Sammy Davis and the Earl of March co-drove a blown two-seater Seven to victory in the Brooklands 500 at 83.42 mph. Sir Herbert, incidentally, must have been well content with the lessons this marathon taught, because out of the six Sevens that started, only one, the winning car, lasted the course. Davis had taken the precaution of learning his lesson before the race started, putting his car through a full 500 miles rehearsal.

In track stints of more than about a half-hour's duration the cobwebby Sevens were liable to pay the penalty for their ultralight construction by shedding or breaking vital bits en route. During a long-distance records session right after the Davis/March success in the 1930 500, for instance, the 500-winning car first broke a fuel line, then a shock, then shook a high tension lead out of the distributor, then another, then another. In spite of time out for repairs, though, this bid yielded thirteen H-records, including the twelve hours at 81.71 mph.

One of the few occasions a racing Seven was seen in action on U.S. soil was in February of 1931, when Malcolm Campbell, at Daytona for his almost annual quest for new land speed honors with Bluebird, also made all-time's fastest Class record — 94.03 — on an Austin, This was the first time ninety had been topped on 750 cc.

In sports car racing the Seven's successes were never on the same scale as the Midget's, though Longbrdge certainly had its moments. Among these were the 1929 Tourist Trophy, in which four Austins started, none of them had a single adjust-

ment or involuntary stop in an aggregate of 1364 flatout miles, and all four finished, two of them in third and fourth places overall. This the *Motor* called "the most remarkable feat of all", and "all" included a win for Rudolf Caracciola on a 7.1 litre Mercedes at the highest speed that had ever been recorded in the TT series, 72.82 mph.

The following year, in Britain's only 24-hour race, the Brooklands Double Twelve, a pair of blown sports Sevens placed one-two in their class; here without realizing it, Austins were making hay while the sun shone, for it was in the same race a year later again that Mr. Kimber's' C-Type MGs celebrated their sensational advent, scooping the first three places on general classification — not merely at 750 level.

A couple of Double Twelve incidents, both centering on Sevens, illustrate the mañana atmosphere in which 24-hour races were contested in this leisurely era. On the first day of the 1930 event (the Double Twelve was a two-act production, cars being impounded during the intervening night) an Austin lost all its oil and consequently pulped a brace of bigends. After dismantling the engine at their pit, the co-drivers concerned. Burt and Edwards, made a two-point provision for meeting the emergency: -1) They telegraphed (rather than telephoning-heaven knows why) to the Austin factory at Birmingham, 100 miles away, for two replacement conrods to be despatched to Brooklands by train; 2) In case the new pair should take too long in transit - and they did - they took the loused ones to a nearby speed shop for remetalling. While awaiting developments, Burt and Edwards beguiled the passing hours with picnics and social intercourse in their pit. When the remetalled rods eventually showed up they worked like crazy and got the reassembly job finished just six minutes before the end of the first day's racing. The car went into overnight custody and reentered the fray on the morrow.

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In the third and last Double Twelve, in 1931, the Seven shared by Driscoll and Frazer Nash tore the cylinder block off its base flange. This time they did indeed have a replacement block sent down from Birmingham while the race ground relentlessly on. When zero arrived for the second day's stint to start they were allowed to push the crippled car to the line and get busy on it. Simple and accessible as the s.v. Seven was, they were fortunate in being able to complete this major backtogether operation in less time than it takes to clean the contact breaker points on some modern engines.

Tom Murray Jamieson's major opus, the long awaited DOHC Seven, was launched under a cloud of omens in April of 1936, on the thirteenth anniversary of the flat-header's racing debut. Two of these twin-cam babies were entered for a routine Brooklands meeting, to be driven by Charlie Dodson and Pat Driscoll. Dodson, in a moment of abberation, drove his car into a post in the competitors' en closure before racing started and disabled it; or rather them — car and post both And Driscoll spun out on the first lap of his first race with the twin-cam.

Its second appearance was equally inauspicious. For the International Trophy. run over an artificial road circuit at Brooklands early in '36, Longbridge came in with three cars of this type. Only one lasted the 262-mile course. The second succumbed to ignition trouble and the third. Pat Driscoll's, threw a conrod; if Pat hadn't been wearing a crash hat (they weren't compulsory in Britain back then) the rod would have brained him. As it was it just hacked deep scars in his helmet. After this, things started looking up, and the DOHC Seven, the first British car conceived and designed de novo for racing in many years, began soaring to its predestined peak as a winner of races and pulveriser of records

Jamieson had been allowed to write his own ticket this time, and the result, once the initial bugs were evicted, was just a prayer away from perfection. Technically it was a tragedy that WW2 foreclosed the development of a design that, particularly in the engine department, was years ahead of its time and made the corresponding MG look like a piece of agricultural machinery.

Breaking right away from previous Seven practise, the cylinder block and crankcase were one unit, using light alloy. Dimensionally too, tradition went overboard, the new bore and stroke being 60.32 by 65.09-mm (compared with the sidevalver's immemorial 56 by 76), dropping the displacement a shade from 747.5 to 744 cc. Steeply domed pistons worked in wet liners, the upper part of these sleeves having deep circumferential fins and projecting about 11/4 in. above the upper face of the block itself. Sandwiched between the block and the detachable head, and surrounding the finned portion of the liners, was an additional and detachable section of water jacket. The fully counterbalanced crankshaft, with enough meat in the journals and crankpins for at least 1100 cc, ran in three bearings, rollers at each end and plain in the middle.

The two overhead camshafts had three plain bearings apiece and were driven by a train of gears at the back of the block. The same train drove the Jamieson Rootstype blower, three oil pumps combined in one unit (high and low pressure delivery, and scavenging), the 50 gallons-per-minute water pump, and a single magneto. The starting crank engaged a dog on a skew drive taken off the water pump spindle, and projected at the side of the engine.

There were two very large and equalsized valves per cylinder, making an included angle of 90 degrees and seating on Monel inserts in the RR50 alloy head; valve closure was by three concentric springs per stem. Auxiliaries included a big bore SU carburetor and 14-mm plugs. Blower pressure could be varied at will without lifting the head by juggling with pinion sizes in the gear train, the range of supercharger speed being from 11/4 to 11/2 times crankshaft rpm. Maximum boost was 22 psi.

There was dry sump lubrication with the oil carried in a two-piece tank flanking the gearbox. The low-pressure element of the oil pump fed the blower, cams and gear train; the high-pressure side had a bifurcated lead, one half delivering to the front of the crankshaft and thence to the "FLIP-UP" BUBBLE SHIELD FOR BELL 500TX HELMETS

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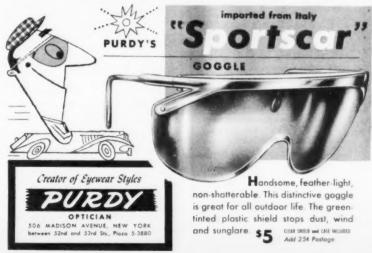
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(Continued from page 91)

big-ends, the other half to the mains. Elektron metal was used wholesale throughout the engine, which was outstanding for rigidity and symmetry. The big-ends were plain, with ribbed caps. Aloft, rockers were dispensed with, the very wide cams attacking the valves directly through pistons containing biscuits for adjustment.

The performance of the DOHC Austin engine is controversial. According to Roland C. Harrison's Austin Racing History it developed 90 bhp at 7600 rpm on long distance fuel and 116 at 9000 on a sprint brew. On the other hand, Jamieson himself told me they were revving her to 10,000 in Brooklands Mountain races; and Driscoll, who is an engineer as well as a onetime driver and may be expected to know the subject as well as any man alive, asserts that 14,000 revs were actually achieved. It's hard to imagine an engineer of Jamison's caliber allowing the apple of his eye to be screamed up to these dizzy turnovers, either on the bench or in races, if there was no more power to come above

A four-speed crash gearbox and single plate clutch were built in unit with the engine, with a synchromesh alternative for use on specific circuits. To get a low drive line and thereby reduce seat height in the single seat body, a double reduction axle was used; so the driver, instead of sitting beside the transmission, as on the s.v. Jamieson car and some of the other flat-headers, straddled it. The chassis, with deep channel section sidemembers and tubular crossties, was a rather distant relative of the old A-frame; but the suspension, using a single transverse front spring and quarter elliptics at the back, made no leaps in the dark.

A valuable and distinctive feature carried over from the Jamieson sidevalver was a straight tubular front axle with provision for limited rotational movement of the two steering pivots in relation to each other. The steering box itself was mounted centrally, high up behind the engine between the cheeks of a very massive scuttle structure which itself helped to stiffen the frame. Brakes were cable operated, with front drums of a size that completely filled the wheels.

As a driver in his own right - he had broken international records with a Seven in 1933 - Jamieson was quite aware that drivers are also people, and thus entitled to a person sized cockpit and such comforts and ameneties as you can reasonably budget for in the confines of a tiny racing car. The DOHC Seven, therefore, like its immediate predecessor but unlike some of the older s.v. types was a thoroughly well found automobile which neither cut your shins nor barked your knuckles; it also steered and held the road phenomenally well considering its kiddicar measurements - 82-inch wheelbase, 47-inch tread and running weight of 1092 pounds. The tread of the original Chummy 7 had been determined by the width of the average small householder's front garden gate, which as Herbert Austin had ascertained by going around the suburbs with a rule in his hand, "was rarely more than four feet wide"

Its good all-around roadability played an important part in the twin-cam car's unhappily short but nonetheless brilliantly successful career. Uniquely versatile, it excelled in every branch of speedwork, from short and twisty hillclimbs through road races over courses such as Donington Park and London's Crystal Palace, to long distance track events and record work. The DOHC Austin still holds two of the longest standing international records in the book. nearly a quarter of a century after they were set up: Charles Dodson's Class H standing mile and kilometer, at 95.1 and 83.6 mph respectively.

The 750 hour record that Dodson made in 1936 - 113.99 mph - survived until 1953. At Donington's Coronation Trophy meeting in 1937, Charles Goodacre's DOHC Seven cleaned up the entire program of races, something that had never been done before in Britain and has never been repeated. The little twin-cam was the only seven-fifty to ever win the longest established classic of the British Racing Drivers' Club - the Empire Trophy race (Dodson at Donington, 1938). In Craigantlet hillclimb, over the longest and most difficult hill course in the British Isles, Austin mechanic Bert Hadley hurled the Jamieson prodigy to the summit in a time that cut the all-powers record by more than two seconds. Driscoll's 121.14 mph class record for the Brooklands main circuit set in 1936, beat the existing MG mark by the unprecedented margin of 41/2 mph.

The two local Brooklands records that Austin left permanently on the books when the track folded forever in '39 will be meaningless if you've never seen the place or have no yardstick for comparison. You never will see the place now but here's your yardstick: - Round the Mountain course. Dodson made it 77.02 mph on 744 cubic centimeters; at the other end of the displacement scale the fabulous Bimotore Alfa needed 5.8 litres, sixteen cylinders and four blowers for a Class B record of 77.84 mph. On the track's other ersatz road circuit, the Campbell course, Hadley did 69.87 on the Jamieson buzzbomb and the Bimotore managed 70.11 per hour.

#### Souping Small Ones

(Continued from page 85)

really high speeds see that you have enough valve spring tension to prevent

Compression ratio is one of the most lucrative hop-up areas of all on small economy engines, simply because these engines were designed to burn 80-octane European gas and compressions are limited to around 7:1. On regular U.S. grades, which average about 92 octane, you can raise this to at least 81/2:1 with safety. This change alone will boost hp and torque between 5 and 10 percent, and fuel consumption will tend to be less because you're actually increasing engine thermal efficiency. I've already mentioned using dome-top pistons to raise compression ratio. Or in most cases you can mill off the stock cylinder head anywhere from .030 to .100". Be sure you know what vou're doing here, as you can get into valve and piston clearance problems. Remember also that any increase in piston displacement automatically raises the compression ratio; in general a 20 percent increase in cubic inches will raise compression 1.2 ratios.

#### THE OVERALL PICTURE

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The very first thing to do is decide how much money you can spend on the whole hop-up project. (And don't forget the cost of labor here. If you can't do the actual installation yourself you'll have to pay for this work at the rate of \$5.00 or \$6.00 an hour. Include this in your cost plans.) After you have the money alloted you can visit your parts dealer or start combing the ads in the magazines for speed equipment. If your budget is quite limited naturally you'll have to concentrate on simple bolt-on equipment -like dual carburetion, exhaust headers, superchargers. If your budget is limited to start, but you expect to be able to spend more in a few months, it might be a good idea to go inside the engine first. With one tear-down you could install a special camshaft and have the cylinders bored for domed high compression pistons. Your high-end breathing would be short with stock carburetion, but torque and throttle response with this combo should keep you busy for a while.

If you can afford to start out by spending \$200 to \$300 for parts you'll probably want to consider complete hop-up kits. Most of you can probably name a dozen of these-the well-known Okrasa for VW, Ferry's kit for Renault, the Stanguellini and Abarth kits for Fiat, the British kits from Aquaplane, Mays. Elva. Alexander, Bucklers, etc. And don't forget the supercharger kits from Judson, Pepco, Shorrock, Marshall-Nordec, Arnott, etc. I don't know of a dog in the bunch. Prices vary from \$150 to as high as \$600. The unblown kits run from just dual carburetion to full packages with dual carbs, dual exhaust headers, a special cylinder head, cam, ignition coil, pistons and long-stroke crank, and even special gears for the rear axle. Study the field carefully before you buy. You may just end up by multiplying your stock horsepower by 21/2 . . . and staying with Chevy V-8's at the stoplight!

### THE MUTTLE 3

The Ford Anglia has very precise steering, but while its back wheels stay upright. they lose their affinity for road surfaces of small irregularities because the heavy rear axle is none too well located by the leaf springs. Even on straightaways, this can be a problem that goes unnoticed by the swing-axle drivers but keeps the Ford pilot busy. And if it's an uphill climb, the Dauphine (which normally runs side by side with the Anglia) just walks away.

But what the English Ford loses on these esoteric grounds, it makes up for with by far the largest service facilities. Every nut and bolt can be undone with American tools.

Ford and Renault salesmen alike make capital out of what many consider to be their biggest drawback: the three-speed gearbox. It has a shift pattern identical to that of American cars of, lo, these many years ago. Though it may require getting used to, the VW's four-speeder is well worth it to the performance minded. The ratios are decently spread and the shift lever itself moves precisely yet smoothly. The Ford has ratios that, well, really, who ever heard of a 2.01 to one second cog? The Dauphine's are closer but the halffoot movement across the gate is ridiculous. Another dismaying feature of the Renault is closely associated: as you engage the clutch, the transmittal of torque twists the engine-gearbox unit which in turn pulls the gear lever forward practically out of your hand. When you brake, the lever moves back at you. Cause? The supersoft mounting of the engine-gearbox combination (to isolate vibrations) and the absence of radius rods on the axle tubes.

Lest you think we found the VW free of faults, note that it's very noisy inside at full throttle, that on metallic grids commonly found on bridges and overpasses it gets nearly out of control, that its turning circle is gigantic for a 94.5 inch wheelbase, that its super-long intake manifold creates a magnificent flat spot when jumping on the gas, that its trunk lid and engine cover can be jammed shut merely from the bumper being dented, not to mention from direct impact, that the heater and defroster are inadequate in cold weather and impossible in warm, humid weather, and finally, that it is noisy at part throttle 100.

To the owner who just uses his car. perhaps the most significant thing about engine placement is wherever it is, the luggage isn't. The VW with its sloping hood loses much usable space in an attempt to achieve aerodynamics; the loss is made up for by internal trunk space behind the back seat.

The Renault's more stylish front gives much more volume for luggage with further advantage conferred by the difference in front suspension layout. The spare tire

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### THE MUTTLE 3

slides between the front suspension members, a feat the VW can't duplicate since its torsion bars are stacked vertically and run right across the front of the frame.

The Ford's trunk is quite conventional, in keeping with the general layout of this Detroit-designed, Dagenham-produced car. A touch of brilliance is the placing of the gas tank within the left rear fender behind

the wheel well.

An advantage of the Ford with its front engine is that the passenger compartment has not been shoved forward relative to the wheelbase. This was dictated on the other two cars by center of gravity location and engine-gearbox space requirements. The further forward you move, the closer you get to the front wheel arches which, because the front wheels steer, must be wider than the rear ones and more of a nuisance. Though feet take up less room than hips, the requirement that the driver sit catty-cornered is far more tiresome than that an occasional back seat passenger might feel cramped-especially since the latter is rarely the buyer of the car in question.

By the time the salesman has run through his version of the technical advantages of his car's layout, the would-be buyer is either champing at the bit to drive one-or else fallen asleep in the back seat. There's much to be said for saving the tech-talk till after the initial ride. By then there is more apt to be a real interest in the why

and how.

To the novice buyer, the first driving impression is that what is lost in brute force and wheelspinability is more than equalled in nimbleness. All three have quick steering, in fact, almost disturbingly so to some. Even more disturbing in the VW is that with the plunging hood-line and low fender crowns, there is nothing to be seen through the windshield except the roadway. This seems like too much of a good thing until familiarity develops a

sense of size and direction.
In acceleration, the Volkswagen, a full 10,000 miles on the clock, had a clear advantage over the other two. Partially due to being fully run-in, but credit is due too to the four-speed transmission. The lighter Dauphine has by far the most favorable power to curb weight ratio but was only even with the Anglia. However, its attractive streamlining gave it a one or two mph edge in top speed over the two more

powerful cars.

Streamlining and light weight are the heart and soul of economical motoring; the first reduces power requirements for steady cruising, while the latter reduces the physical work required to reach any given speed, regardless of the rate of acceleration. And although Renault advertising copy keeps suggesting 40 mpg, we found that with our brand of heavy traffic, we got exactly 30 mpg. But this still made it the leader, as the Volks returned only 27.7 and the Anglia 23 mpg.

At this point our potential buyer should be ready to discuss the "deal"-though in the run of the mill American showroom, it's being talked before the office door is half-opened. This, as always, hinges about the trade-in, because no one is going to admit that he's cutting the list price.

But since we don't know what our customer has to trade, we'll have to content ourselves with Port of Entry (N.Y.) list prices and, oh distant memory to Detroit's dealers, the waiting period. Plus some statistics on registration figures for the past calendar year.

The Volkswagen, for which you may have to wait up to six months, costs \$1545 plus \$80 for the sunroof. The Karmann four-seat convertible and the beautiful Karmann-Ghias run from \$2045 to \$2725. The Dauphine at \$1645 outsells its prototype, the 4 CV, by 7 to 1 despite a \$300 difference. It too can come with a sunroof, here the extra tab is but \$60.

The English Ford line is not quite so simple as there is such a multiplicity of models. There's the two-door Anglia and the four-door Prefect in both standard and deLuxe models plus the Squire and Escort two-door station wagons and the Thames 500 panel truck. All these have the same chassis and share the 1172 cc 100E flat head engine. Prices range from \$1464 to \$1761, our deluxe Anglia costing \$1561. As with the Renaults, deliveries are essentially immediate-if the dealer hasn't got it, his distributor does. Larger engined models (Consul, Zephyr and Zodiac, etc.) are imported too, ranging from \$2034 on up to over \$3000.

Registration figures for 1958 have just been released, they are rather interesting. The VW is far and away the leader with 77,000 (plus 25,000 Transporters). Next is the Renault with 42,000 Dauphines and about 5600 4 CV's. Third is English Ford with 15,000 Anglias, 5200 Prefects and 4500 other 100E series cars plus 8500 larger

models for a total of 33,200.
All of the Big Little Three are well established, but as they are so different, so must be the reasons for their success. Admittedly it's oversimplifying the situation, but we would sum it up this way. The Fords sell on their conventionality, both of design and merchandising. After all, Ford dealers have been around a long time. Besides, they'll take trades without any trouble.

The Renault sells on its styling, with strong emphasis on the conventional details of its engineering layout (water cooling, in-line cylinders, three speed trans-

mission, etc.) And the Volkswagen, well, it seems to be selling on its reputation, one it earned the hard way. Much to our Advertising Director's disappointment, they hardly ever advertise but despite this, they have come from behind, overcoming both a disinterest in small cars and a certain amount of post-war mixture of racial and national feelings.

We are doubly indebted to the following organizations for lending us these cars,

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#### Passionate Pig

I held third, and we kept swapping places with the next Pignatelli with Naysmithe-Smithe and De Luca up. We ran this way for almost nine hours, with no more trouble than a couple of gallons of gas spilled into Alexis' cockpit instead of the

The problem of finishing a long race is not only mechanical. It's got to do with the eating and drinking habits of Southern European mechanics. They drink wine. Then they eat, and drink more wine. Then they drink more wine, They don't get drunk because they've been drinking wine since they gave up mother's milk. But they do drink a lot of wine, and all the time. After twenty-four hours without sleep, and ten hours of racing with all three cars still circulating, they're still drinking wine every time they eat a piece of cheese and garlic, which sort of holds 'em together between the pasta.

So what happens? Allen comes in, and I hop into the car quick. Gas and oil and water, the wind screen gets wiped along with most of my face. Bonnet slams down and I hit the starter. Revs. All of a sudden Signor Pignatelli is in front of the car hollering and waving his arms. His big fat belly is putting wrinkles in the nose. I can't hear what he's yelling, of course. Then Allen jumps down off the pit counter, reaches under the car and pulls out Guisseppe. Seems he fell asleep underneath while checking the rear suspension.

We're disqualified. Two drivers and four pit crew all working on the car at once.

Alexis roars in a few laps later for two new rear tires. This time they don't spill over a half gallon of gas on the seat. He's out in thirty-seven seconds. Now, the first turn at Rheims is about 1,000 yards after the pits, a sharp right-hander, I watch as he goes full bore third gear into it. He's full bore in a righthand drift, and full bore up the shoulder and off the road into the trees. When they pulled him out of the wreck he was just a little bewildered. He kept shaking his head and saying "It didn't steer, it didn't steer." He was right. The steering action is just no good when the mechanics put a sixteen inch wheel on the left rear and a fifteen on the right.

Well, Pignatelli got a fourth at Rheims.

The next race, the Mille Miglia, was the biggest of all, and that's why I'm back pumping gas in Queens. Believe me, Uncle Dino won't even talk to me, and his friends in Sicily send small bombs by parcel post.

Allen was ill, so I got the second car, to leave just one minute after Alexis.

We practiced for almost a week on the open roads between Rome and Brescia, dodging trucks and donkeys, and in that week I learned two things. I could hold Alexis because my car was just a little bit faster, which means I could beat him on time. I also discovered that Leigh Scully was the most beautiful woman I had ever seen, and at least somewhat availble. The second discovery came after the practice sessions, when the whole team went out every night to the various upper, middle and lower Roman bistros. Leigh came along and we passed the stage of long looks to even longer talks and et cetera. Alexis gave me some long looks, too, and each one blacker than the one

At the start of the race, I went up the ramp and there was Leigh. She gave me a long, warm kiss and breathed, "See you at Rome, darling." She didn't know that I had seen her do the same thing to Alexis just one minute before. Then the race was on. It was the Thousand Miles of Italy, a Grand Epreuve for Pignatelli, and a private Grand Prix to Rome between me and Alexis Vhlavianos, with la Leigh as the Prix.

Well, it's a long way to Rome, a lot of corners to make, a lot of long sweeping bends to drift and a lot of spectators to dodge. I kept Alexis in sight and maybe gained a second or two. We were running second and third, with only Moss in the big Maserati ahead.

I followed Alexis through the streets of Rome, passing all manner of Fiats and other small machinery on the way. When he got to the check point he slammed to a full stop, instead of just rolling along at about 15 and making the officials run along side to stamp his route ticket. Maybe something was wrong with him. Then I saw Leigh standing tall in her black velvet toreador pants amid the gesticulating (Continued on page 98)

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### TR-10 Wagon

(Continued from page 61)

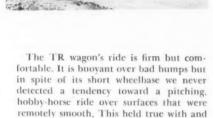
TR 10 extremely well. We were sold on the car all the way. During the entire trip very few cars passed us. Our long hauls were driven straight-through but with an absolute minimum of fatigue. We never considered driving for fuel economy. Consumption ranged from 28.4 to 39.6 mpg and we averaged 31.4 for the total distance. Very cheap transportation.

The little high-camshaft ohv engine never ceased to amaze us with its smoothness, even when it willingly wound to 6,000 rpm in the indirect gears. The only notable vibration in the entire vehicle showed up in the drive shaft at an indicated 80 mph, which only can be reached on downgrades and for which the car was not designed. The engine's valve timing has a competition-cam flavor, soft at low revs but coming in with a strong, long, flat torque curve higher up. At 50 mph in top gear it hits a smooth and flying stride that lasts right out to the peak.

The little Triumph's four speed gearbox is one of the very best. The synchromesh is positive when going up or down and the choice of ratios is just about ideal. First cog is easy to get into without crunching; its ratio, necessarily with so small an engine, is very low. Second also is quite low and, as we found, will pull grades that few motorists ever will be called upon to tackle. Third's ratio is close to that of top gear and, with a capacity for winding indefinitely, is fine for passing. Pulling power in top gear is astonishingly good at crankshaft speeds that would spell dangerous lugging in most cars of less than two liters' displacement. A soft but positive clutch caps this happy combination which actually gives the little Triumph something of a race-car feel and the fun that goes with it. As my co-pilot remarked after our first bout with a mountain range, "This little thing thinks it's a Maserati."

The gearbox has a shortcoming. The long, cranked shift lever must be lifted away from the gearbox for reverse to be engaged. There is a knack to this that is easy to master. But until it is discovered there is no alternative but to lean forward, grasp the shift lever at its base, pull up and then shove the gears into mesh. Improvement is needed here.

The TR 10's brakes are above-average in spite of diameter and air spaces that are restricted by 13-in, wheels. In our telling brake test consisting of ten consecutive panic stops from 60 mph the tendency to fade was too small to be measured. But for many drivers this will be a point of only academic interest. Down-shifting for engine braking is such a natural and pleasant operation that, in our 10,000 foot descent from the Rockies to Oklahoma, for example, we hardly ever touched the brakes.



without heavy cargo at the rear.

The steering has that bicycle-like lightness and directness that are characteristic of the well-made small car. The wagon tracks truly and is pretty much self-steering up to the vicinity of an indicated 80 mph. In that range it begins to wander, particularly in the presence of cross winds, and demands alert correction.

Wind noise in the passenger space is a function of window adjustment. If you drive with only the driver's window down there is considerable noise and buffeting beyond about 40 mph. But combinations of opening of the other windows eliminate the buffeting completely and reduce the noise to a very low level. Booming along at 70 with such an adjustment the loudest noises are the quiet, ball bearing-like whirr of the engine and a faint, pleasant singing note from the final drive. A change that would add greatly to the enjoyment of the car would be an openable rear-door window.

The Triumph's unit-construction body does not telegraph road noise as some body-frame structures do. We found the wagon to be rock-solid. By the end of the trip no squeaks or rattles had developed and the body remained absolutely water-tight through many torrential storms.

Very few bugs detract from this wellengineered little car's perfection. Annoying ones that should be corrected lie in the door latch mechanisms. Latch pegs project from the center pillars at just the right height to tear belt loops from trousers or otherwise snag clothing.

Griff Borgeson



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### Passionate Pig

ufficiali. I pulled up right in back of him and slammed dead stop. Alexis turned around and gave me one black look through the dirty goggles - you'd never know this guy could speak any language but Sicilian from that look - and then turned back to Leigh. But she didn't even look at him. She waved at me, showed those perfect pearly white teeth and took a step toward my car.

Alexis Alfonso Vhlavianos, Marquis of Valladolid, Duke of Parma, Baronet of Chinchester, etc., knew right then and there that he had lost the private Grand Prix to Rome and that Joe Provone of Joe's Gas Station, Queens, New York was going to enjoy the first prize.

Did he holler, jump up and down and bite his hand like a Sicilian? He did not, despite his grandmother's estates. Did he smile wistfully, shake his head mildly and wish us luck? He did not, despite his mother's second husband being a direct descendant of the Chancellor of the Exchequer. Did he go out and get roaring drunk and stick his fist through a back bar mirror? He did not, despite at least some connection with the Crockers of California. No. He gathered together those two thousand years of Spanish blue blood, and like the conquistador he was, he grabbed Leigh Scully around her 19-inch waist and slammed her into the passenger seat of the Pignatelli, They shot off in a cloud of Castrol.

I was dumbfounded. Nothing like this ever happens at the Sports Car Club events. It's against Rule IV. What would happen at the finish line? I didn't know. but I was sure gonna find out. I let in the clutch and blasted after him, scattering officials as I went.

We roared through Rome, following the big red arrows at every corner, and clipping the haybales as we went. Alexis really poured it on, climbing the curbstones to cut off inches and bouncing the rear fenders off the walls of buildings. I gained on him all the same. Those welldistributed 110 pounds of passenger were enough to give me the edge.

We were out of Rome and in Orvieto. Down the main street. There's a big red arrow pointing a ninety degree righthander. Alexis hit the brakes, throws out the back and slides left-right down a hill and out of town. I follow automatically. braking, shifting, sliding.

In the middle of my slide, I see the red arrow pointing the wrong way, and a calm inner voice asks "What about the race?" But I want to catch Alexis and save my girl (now she's my girl, yet) from a Fate Worse Than Death. If Alexis even hears inner voices, I don't know, but I doubt it.

Now you know why I'm back in Queens. Why I retired from Pignatelli, Why I'm back at the gas station.

Because Alexis missed a shift in a little town 12 miles off the Mille Miglia route and bashed the front end of the Pig into a donkey stall. Because I stopped along side and punched him in the chops as he started to get out of the car. And not least, because I got a head-splitting blow from Leigh's small right fist as I reached in to rescue her.

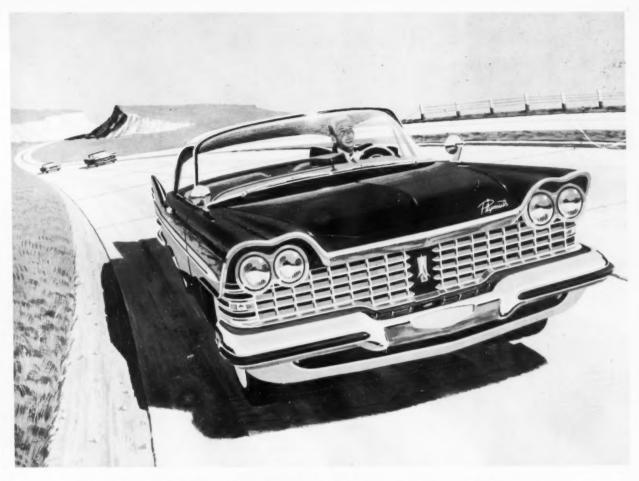
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### -Robert G. Lurie

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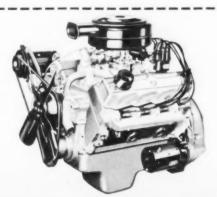


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